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FOR

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An ACCOUNT *of the* YELLOW FEVER, *as it appeared at* STABROEK, *in the* COLONY *of* DEMERARY, *during the principal part of the years* 1803 *and* 1804. *By Dr.* WILLIAM FROST, *physician at that place; addressed to Dr.* JEREMIAH BARKER *of Portland, and by him communicated to Dr.* MITCHILL.

YOUR request, previously to my departure from Portsmouth, (N. H.) for the West-Indies, that I would "communicate to you any observations I might make on the Yellow Fever during my residence there," has drawn from me the subsequent account, &c. of that malady as it occurred in my practice while at STABROEK, in the Colony of Demerary; a place, perhaps, as noted for malignant diseases as any in the West-Indies, and for their destructive effects on persons unassimilated to that climate.

This account of that insidious disease, generally known by the name of Yellow Fever, was thrown together during the few spare moments I had by day, and at night, after considerable fatigue; which doubtless will be a sufficient apology to you for its imperfections. But before I enter upon the history of this disease, it may not be deemed improper to premise a topographical account of Stabroek and the country contiguous, as far as relates to its CLIMATE, SOIL, &c. which may perhaps point out to you its causes.

STABROEK, the principal town in the Colony of Demerary, in Dutch Guiana, South America, is situated on the East bank of the river Demerary, about a mile and a half from the place where that river flows into the sea, in latitude* 6° 45^{m} North. Longitude 17 E. from Philadelphia:

* Nearly the same degree of latitude North, that BATAVIA in the Island of JAVA is South.

and is nearly equidistant from Paramaribo in the Colony of Surinam and the river Oronoco.

The town is built in the form of the letter T inverted; and contains perhaps 250 or 300 houses, including stores: but stands on more ground than almost any other place that has only an equal number of houses.

As there never has been a regular census taken, and as its *population is very fluctuating*, it is difficult to say precisely how many inhabitants this town contains: but I presume not more than 1200 white inhabitants, nor less than 4000 slaves.

This town, in point of elevation, is short of two feet above the surface of the sea from high water mark in common tides; and at the Equinoxes, it is frequently overflowed by the tides, to such a degree, that the inhabitants are obliged to have recourse to boats for conveyance from one house to another. The town, as it stands along the banks of the Demerary, is about three quarters of a mile in length, and not more than the eighth of a mile in breadth, excepting one street, which is called the *Brick-dam-street*, or more generally Brick-dam. This street runs back from about the centre of the town, nearly three quarters of a mile; and has a pavement of brick in the middle of it, four or five feet wide. This is the only dam in town that has any pavement.* The houses on each side of this street, and in the town generally, are tolerably well built, and all of wooden materials; and erected mostly in the English fashion of building houses in tropical countries; some with glass windows, but generally wooden shutters or jalousies, with piazzas built out either in front or on the back side; and are erected on elevated foundations either of brick, or on piles of wood, sometimes drove into the ground. These piles are from two to six feet high. It is not customary to plaster their houses inside, as in some of the Islands, or to use much whitewash about them; but they are generally painted inside and out.

The *streets* or *dams* are in general straight and spacious, and have trenches on each side of them, which, at the

* Since I left Demerary, I am informed by a medical friend residing at STABROEK, that "a tax has been laid on the inhabitants of the town for the purpose of paving all the dams or streets, sixteen feet wide with brick;" which I am told has been done.

spring tides, *can* convey water from the river intirely through them. There are three or four canals that run through the town, for the purpose of conveying merchandise to the inhabitants. Besides these canals and trenches, there are several others back of the town that cross those just enumerated at right-angles. These canals and trenches generally are the depositories of putrid substances; such as dead rats, cats, dogs, putrid fish, the refuse vegetables of the kitchen: and also of human excrements, putrid weeds and grass; and the water is often allowed to remain in a stagnant state in some of them, for months together without being evacuated, in consequence of the sluice-gates being *neglected* to be opened. From these putrid sources deleterious gases are continually exhaling, peculiarly offensive to *new comers*, and to those who come in town from the plantations, though scarcely observable by the inhabitants residing in town.

They sometimes clean these canals and trenches; but this business is performed in such a manner, as scarcely to render them less a nuisance than before; for the bottom being cleared of its black mud, it is left on the margin of the canals, until it is hard enough to be taken away by the negroes in lumps. It will be readily conceived that this mud is a compound of every thing that can be imagined disagreeable and offensive. Hogsheads of damaged fish, such as cod, herring, alewives, &c. are frequently thrown on the banks of the Demerary, and in the neap tides the action of the solar rays contributes not a little to the generation of septic gases.

The American and European sailors are obliged to land their cargoes in these canals, and on the banks of the Demerary. Their exposure to these noxious exhalations, particularly at the efflux of the tide, combined with the vertical rays of a scorching sun, are frequently productive of immediate attacks of the Yellow Fever. But what is a little singular, the inhabitants of the town who live on the banks of the river, and on the margin of the canals, &c. who have been accustomed to the air of Stabroek, rarely or never suffer by malignant diseases.

The river Demerary runs North and South, and penetrates farther into the interior of the country than has ever been explored by any civilized beings, as we are informed. Its entrance is obstructed by a bank of sand and mud, on which, at the highest tides, there is not more than 26 feet

of water. It is about two miles wide at its mouth, and does not diminish much in width opposite the Town; where the shipping, for the most part lay: the bottom is composed of soft blue mud; and the tide is very rapid. At low water a great surface of flats is left exposed to the action of the sun. This river is said to be navigable with small craft, upwards of two hundred miles from the sea. The spring tides rise from 10 to 12 feet, and the depth of the river in the channel at low water, is from 18 to 24 feet, opposite Stabroek. The Salt water, however, does not run up the river higher than thirty or forty miles.

The *Fort* that guards the entrance of the Demerary stands on the East bank of it, at its very mouth; and is so constructed, that if well supplied with *courageous men*, ammunition, &c. it would effectually guard its entrance.

The *Police of the Colony*, for wise purposes, have deemed it eligible to have allotted stations for the European shipping, as well as for the American. The former are stationed below the Government *Sterlin*,* and from that towards the Fort or mouth of the river, (leaving a space between two of the Canals unoccupied, for the better accommodation of the small craft or Droghers in passing in and out) and the latter above the government sterlin, and so extending up the river. All are to anchor not nearer than seventy-five fathoms from the shore, in order that boats may safely pass up and down the river. At these anchoring places, the vessels generally discharge and receive their cargoes; though sometimes they are permitted to discharge at the sterlins.

Soil. The sea coast of this Colony trends about E. by S. and W. by N. and for several hundred miles along the coast, (Surinam and Berbice included) the country is so low, that vessels in running in for the harbours, make the masts of the shipping lying at anchor in the harbours, some time before the land. For thirty miles back, due South from the sea, the land is only thirty feet higher than the surface of the Ocean, with an average ascent of only a foot for a mile; as we are informed by those, who have ascertained the

* These are a kind of wharves that run off into the river and extend a little below low water mark. They are from 150 to 200 feet in length and from 25 to 30 in breadth. Government Sterlin runs from the river, directly up to the Brick Dam (street,) which Dam was observed to be about the centre of the Town.

heights of the land at the different distances. In all that space, the soil is composed of a blueish ductile clay twenty or thirty feet deep, and in the wet season, it is rendered extremely soft, muddy and difficult to travel on; and will admit a pole being thrust down into it four or five feet, with great facility. On its being exposed to the action of the sun's rays for a few days, it changes from a blueish complexion (which it naturally assumes in the wet season) to a dark brown colour, and becomes very hard; but it is exceedingly rich and fertile and for the most part easy of cultivation,* after the superabundance of water has been drawn off by drains, &c. No rocks or stones can be found except in the interior of the country; none within thirty miles of the sea. But at the distance of thirty or forty miles from the sea, you come to quite a different soil, a hilly country, pure elastic air, and where a fire is frequently not disagreeable. There are however certain longitudinal ridges or reefs of fine sea sand and shells, which run parallel to the sea coast, at the distance of three or four miles from each other, as you recede from the sea; which would lead a person to presume this ground was once visited by the Ocean.

Excepting a strip along the sea coast, for two or three miles back from the sea, and on the banks of the Demerary about the same distance in breadth, and upwards of thirty miles up this river, the whole country remains a perfect wild of forests; and known only to *run-away or bush-Negroes* (as they are called) and wild animals. But that part of the country under cultivation, can produce some of the most elegant and fertile plantations, perhaps equal to any in the West-Indies.

You can readily conceive, Sir, what amazing quantities of water accumulate during the wet season, in that low dreary waste, when for nearly six months of the year rains have been almost incessant; where the water remains stagnant during the dry season, as is unavoidably the case; and where "The hoary *Fen* in putrid streams emits the living cloud of *Pes-*

* The *produce* of this Colony is Cotton, Coffee and Cane. There were exported from Demerary and its dependencies, as taken from the Custom house books there, from January 1st. 1798 to January 1st. 1802—36,579 hhds. Sugar, 9,277 Puncheons Rum, 83,759 bales Cotton, 32,222,564lbs Coffee, besides great quantities that were doubtless smuggled. I have not been able to find out the exact quantities, exported since.

tilence." You would naturally conclude that the Hydrogenous gas and Hydrocarbonate must consequently render such a region almost uninhabitable.

It might be observed, there are but very few trees within the settlement of Stabroek; not so many as to affect the surrounding atmosphere by any means. But at a short distance back of the Town, there are several beautiful walks and groves of the Orange, Lime, Lemon, Tamarind, &c. irregularly intermixed, where

> " The blossoms blow, the birds on bushes sing,
> And nature comes arrayed in all the spring."

WINDS. Frequently during the wet season, and sometimes in the dry, the winds at night blow south easterly, which is directly over these immense regions of swamp and wilds of forests in the interior; so that they are wafted over the town of Stabroek and the settlements generally. These winds render the air exceedingly humid and chilly, so much so, that an additional covering of a thick blanket is frequently indispensably necessary for comfort during the nights.

The mornings are in general close and very sultry until nine or ten o'clock, when the wind turns to the N. E. which is the trade, and directly off the sea (*called by the Creoles the* DOCTOR) and continues a steady refreshing breeze through the day, and declines at evening about six or seven o'clock. During the dry season, the winds for the most part, are eastward a little northerly; and are consequently not attended with the humidity that the winds are from the south. The wind very seldom blows from westerly points in this country; nor have they ever been visited by any Hurricanes, those terrible scourges in the West-India Islands; but the wind is sometimes boisterous in the wet season. Earthquakes, I was informed, rarely or never happen in this part of America.

CLIMATE and SEASONS. The climate of this colony differs very materially from that of the Islands. The seasons when regular, have been usually accounted *long* and *short*, according to the quantity and continuance of the rain, and are therefore divided into four periods, viz. a short and a long wet, and a short and a long dry season. The long wet season commences in April, and terminates in August. The long dry follows, and continues until December. The short wet ends towards the last of February, and the succeed-

ing month comprises the short dry season. It rains however mostly in the night, and fore part of the day. About noon the heavens generally become serene, and remain so during the subsequent part of the day. I was informed by some respectable old inhabitants of the colony, that at some wet seasons it had rained for weeks, nay, months without cessation, and without the sun's making its appearance; which would almost entirely deluge the Town and plantations. But of late years, the seasons have been very irregular (as they say) which has been attributed by some to the clearing of the country. In the wet season, the musquitoes are exceedingly troublesome to strangers, and render sleep impossible, unless they are screened from them by a musquitoe-net. At the breaking up of the wet season, the Fulgoræ, Pyrogoni or *Fire Flies* are innumerable in the evenings. These flies, *sharp lightning and heavy thunder*, are the precursors of the dry season. I regretted exceedingly that I had not the proper instruments by which I could have determined the quantity of rain that fell.

In the dry season, the evenings are remarkably pleasant and inviting; and the musquitoes are of very little trouble to strangers; but oftentimes the heat is very oppressive and the air inelastic. Heat-lightning is very common. The *Dews* are less, and for weeks together not any. The mornings as in the wet season are very close and sultry; and what renders it peculiarly irksome is, the almost absolute repose of the air, particularly from six to eight or nine o'clock. It is very often, and I may say, always hotter at that time, than at any other period of the day. Notwithstanding this country is so very low, it is but seldom visited with thick *fogs*; yet the *mists* and *vapours* arise in abundance from the stagnant waters and trenches. The effluvia that are emitted from the canals and trenches in consequence of the action of the solar rays, are intolerable. I am convinced that one of the principal causes of the disease in question, at Stabroek, originates from the septic gases exhaled from these canals and trenches. The hot season, with a few exceptions, is productive of most of the diseases* indigenous at Stabroek.

* The diseases indigenous at Stabroek in both seasons of the year, but more particularly in the dry season, are Diarrhœas, Dysenteries, Remittent and Intermittent Fevers. Yaws, Leprosies, Ulcers on the legs, Ruptures, Colica Pictonum, Tetanus, &c. are not the least terrible diseases; but are more peculiar to the

It may be remarked, that the seasons in the years 1803--4 were more irregular than were ever known before, since the colony was first settled, as I was informed by some of the oldest settlers in the country. During these two years, it was very sickly among foreigners from high northern latitudes. The drought was severe and occasioned the crops to be very short. Coffee was exceedingly pinched, and much smaller in kernel than usual; vegetables of every description were more scarce than ever known to be in the colony before.

WATER. You will readily conclude from what has been said of the soil and situation of Stabroek, that the digging of WELLS for water would be of no permanent advantage; not only in consequence of the soil, but in consequence of the continual percolation of brackish water into them through the earth, *unless they were boxed up water tight* to prevent it: and even then, at the inundations of the tide, the water frequently would flow into them. I was informed that a sandy stratum of earth is to be found, after digging twenty or thirty feet through the upper strata of blue clay. Allowing that to be the case, and if the wells were boxed, still it is presumable the water would soon become unfit for domestic uses. The digging of wells for water has been suggested by several persons resident in Stabroek; but so many obstacles arise, as it respects the permanent and beneficial advantages resulting from them, that no one as yet has attempted it. Of SPRINGS there are none. Of course the water for domestic purposes is principally *rain-water*, and caught from the roofs of the houses in cisterns built partly under ground, or in vats. During the wet season a sufficiency is generally caught to last through the dry; and before it is

Negro race. Hepatitis, Hooping-cough, Dropsies, Choleras, Ophthalmias, Gonorrhæas, Syphilis, Coup de Soleil, Scarlatina, Aphthæ, and the Yellow Fever also prevail. The latter disease prevails among strangers at all seasons. The rural maladies are however but seldom of a malignant nature, infantile complaints excepted. On the east sea-coast, health is said to prevail as much and perhaps more so, than in any of the tropical climates. It is worthy of remark, that the Endemic Fever of the colony was always more rife among the inhabitants inured to the country, at the commencement of the dry season and at the first part of the wet, than at any other period; and always manifested more symptoms of malignancy in its progress at those times, than when the seasons were further advanced.

used, is put into large earthen pots or small guglets to settle; by which means it becomes clear and wholesome. But when it is filtred through a drip stone, there is no purer nor better water in the universe. When it is taken out of the cisterns for filtration or settlement, you can perceive with the naked eye *millions of animalcula darting about in it:* and when the cisterns or vats become low, the water is often turbid and partakes of a nauseous smell. At this time, which is generally in the dry season, fresh water is procured up the river at the distance of fifty or sixty miles from Stabroek, and is there dipped up fresh "along side," and tolerably good. It can however be obtained at a less distance from small creeks; but the salt water at the spring tides flows in and renders it somewhat brackish; and after a few days confinement in a cask, it becomes *as offensive as bilge water.* The negroes as well as whites are often necessitated to drink such obnoxious water, which is soon productive of Diarrhæas, Dysenteries, Dry-belly-aches* &c. of a most obstinate and alarming nature.

The mode of diet and dress at Demerary is not in any essential points different from those in the West India Islands, or from those of Surinam or Berbice.

THERMOMETRICAL OBSERVATIONS, &c. There is not that variation in the Thermometer here, that there is in the Islands. It may be necessary to observe, that my Thermometer was a mercurial one of Fahrenheit's scale, and kept in a lower room where the solar rays were excluded for the most part of the day. The mercury stood the highest in the day from six to nine o'clock A. M. and from nine A. M. to 4 P. M. it was generally stationary. It then began to fall gradually, until 8 in the evening, and then continued pretty much stationary at 85° until six o'clock the next morning, when it would mount up again and would frequently be at 93° at 8 or 9 o'clock in the forenoon. The mercury in the Thermometer ranges in the dry season from 85 to 93°. I have never seen it higher than 93° in the shade; though I have seen it as high as 120° in the sun's rays; nor lower than 80° at Stabroek. Sometimes in the wet season at night, it fell to 80°, though not very often. The average heat at 8 o'clock A. M. was from 89° to 93°; at noon, from 87° to 89½; and at sun set from 85° to 86°; so that the greatest range of the Thermometer was only 13° either in the wet or dry season. And

* Colica Pictonum.

I may add, the sun rises and sets all the year round at nearly the same hour, viz. 6 o'clock. The crepusculum or *twilight* is also very short.

The BAROMETER was affected but little in this country. A humid atmosphere caused the mercury to fall a little and a dry atmosphere consequently made it to rise. The greatest range of the Barometer, as was critically observed, did not exceed eight tenths of an inch. I never saw the mercury higher than 29 inches $9\frac{1}{2}$ tenths, nor lower than 29 inches $1\frac{1}{2}$ tenth. I have known it to stand at 29 inches nine-tenths for months together.

HISTORY OF THE WEATHER. As I was not in Stabroek during the two first months of the year 1803, nor the three last months of 1804, I am unable to give any history of the weather as it occurred during those months: but the remaining months were carefully noted at Stabroek.

In giving an account of the history of the weather, I shall adopt the method taken by DR. CLEGHORN in his history of the weather at MINORCA, by marking the rainy days in the proportion they bore to each other by dots. Thus, drizzling rains are denoted, * showery by **, heavy rains by ***, and excessive rains by ****; because no correct idea could be attained of the quantity of rain that fell, had I adopted the usual method of noting down every showery or drizzly day, a rainy day: as there were many days on which small showers happened, that could not be called in truth very rainy or excessive rainy; as some might suppose was my meaning, who have been accustomed to the heavy rains peculiar to these colonies.

MARCH, 1803—The first part of this month was clear, pleasant weather. The spring tides laid the town nearly a foot under water on the 23d of the month: but they were said to be much lower than usual at the vernal equinoxes. Considerable land breezes.

Rainy days, 6, 15, 16, 17, 18, 19, 20 ** and generally at ebb or flood tide; 13, 26, 27, ***.

Thermometer† Highest 90° } Average heat 87°
Lowest 85° }

APRIL.—This month commenced pleasant; 6th was

† It may be obſerved that when the Thermometer is marked ſo low as 80°, it is to be underſtood, that the mercury was at that degree during ſome part of the night: as I do not remember to have ſeen it ſo low in the day. The average heat as noted, is meant as the Thermometer ſtood from 9 o'clock A. M. to ſun ſet.

somewhat foggy; 4th ** with thunder. I was told there had been no thunder there for ten months before. Rainy days, 5, 11, 12, 17, 18, 27, 28, ** 13, 16, 25, 26, 29; * cool nights.

Therm. H. 91° L. 80° } A. H. 88°

MAY.—Drizzly, rainy weather ushered in this month. Cool nights and suffocating heat in the mornings. The clouds appeared heavy and black over the land, and the winds were frequently boisterous. Lightning was common at night. Rainy days 3, 4, **** with heavy thunder; 23 ** with severe thunder and lightning; 1, 2, 5, 10, 14, 15, 16, 17, 22, 26, 27, 28 *—12, 13, 23, 24, 30, 31. *** The town was almost overflown with water.

Therm. H. 92° L. 85° } A. H. 87°

JUNE was a very unpleasant month. In the fore part of the day, it frequently rained excessively hard, and then cleared off towards noon, very hot and sultry. Heat-lightning was common at night. Rainy days, 1, 11 **** with thunder; 2, 4, 5, 12, 13, 14, 15, 18, 24, 27, 28, 29; * 15 ** accompanied with thunder; 6, 7, 19, 20, 26, ***

Therm. H. 92°. L. 85°. } A. H. 87°.

JULY.—The first week was very pleasant by day, but excessive rainy at night, accompanied with considerable thunder and lightning. The fore part of the day was very close and sultry. By the complexion of the clouds, and the frequent rumbling of distant thunder in the interior of the country, during the latter part of the month, there were reasons to presume, considerable rain had fallen there. Rainy days, 11, 12,** at night sharp lightning; 14, 17, 25, 26,*** principally at night, with vivid lightning and very heavy thunder; 6, 8.*

Therm. H. 89° L. 82° } A. H. 88°.

AUGUST was remarkably dry and hot. There were only two small rains in all this month. The Thermometer has repeatedly been up to 93° between the hours of six and nine o'clock, A. M. the air appeared in a perfect repose, and the exhalations from the trenches intolerable. The sea breeze usually set in at nine o'clock, which rendered life a little comfortable. Heat-lightning and fire-flies were com-

mon throughout the month. No dews in all the month of August.

Therm. H. 93° } A. H. 90°.
L. 87° }

SEPTEMBER—This month commenced as August terminated, dry, sultry, hot weather; and had two refreshing showers, only, in all the month. We, however, have not had any foggy weather since dog-days came in, as is common on the sea coast in temperate climates. The cisterns and vats are becoming low in point of water. The surface of the earth is very much parched by the intenseness of the solar rays. Scarcely any dews by night. On the 19th, the colony capitulated to the BRITISH troops, under the command of General GRINFIELD and Commodore HOOD, on terms by no means derogatory to the DUTCH NATION. No battle preceded the capitulation.

Therm. H. 93° } A. H. 89½.
L. 86° }

OCTOBER continues equally hot as September was. We had three small showers of rain, though hardly sufficient to lay the dust. Fresh water was very scarce and bad, which was productive of obstinate fluxes, &c. It was very unhealthy among the native Creoles. The nights oppressive. Little or no dews.

Therm. H. 93° } A. H. 89°.
L. 88° }

NOVEMBER was productive of six or eight plentiful showers of rain, which were very desirable. The air was very smoky in consequence of the burning of bushes in the back country. Fresh water still continues scarce. We had a few heavy dews this month.

Therm. H. 93° } A. H. 89°.
L. 88° }

DECEMBER.—This amazingly dry weather continued until the 26th, without a drop of rain, and without the smallest dews. Rainy days, 26, 30, 31.* 27, 29.***

Therm. H. 91° } A. H. 88½.
L. 82° }

JANUARY, 1804.—This was the dryest and most parching month of any enumerated in the foregoing history of the weather. We had only two drizzly days in all the month. The oldest inhabitants of the colony say, they never saw a season more irregular than the last; nor one commence

more out of the usual routine of the seasons, than the present year.

Therm. H. 93° } A. H. 89°.
L. 88° }

FEBRUARY continued dry, and the air oppressive. On the 29th it was as foggy in the morning, as I ever saw it in any part of *New-England.* It was however soon dispersed by the scorching sun. Rainy days 3*** and was joyfully received. We had repeated showers about the middle of the month, but I did not note the exact days, as they were so trifling. Towards the latter part of the month, the atmosphere was loaded with vapours.

Therm. H. 92° } A. H. 87°.
L. 85° }

MARCH was as dry as February. Had only a few showers by night, in the latter part of the month. No dews. There was a very alarming fire in the country back of Stabroek, which was said to extend over a range of territory of several hundred miles, and to have originated near, or in the colony of Surinam. This terrible fire is said to have baffled the combined efforts of 3,000 Negroes, in their indefatigable attempts to stop it. In consequence of this amazing fire, the atmosphere was remarkably smoky, sultry and hot. Uncommonly healthful.

Therm. H. 93° } A. H. 89½.
L. 87° }

APRIL.—The first week in this month was without any rain. Rainy days, 7, 9, 10, 11, 12, 13,** principally by night and lowering by day ; 8.*

The fire in the country contiguous to the town has subsided, but not without almost ruining several plantations of cotton and coffee. The damage done by the fire was immense. The nights have become cool and the musquitoes troublesome. The fever was very prevalent among strangers.

Therm. H. 91° } A. H. 87°.
L. 80° }

MAY brought in many refreshing showers at ebb and flood tide. The sky then assumed a serene aspect, and the sun became powerfully hot *to strangers without umbrellas spread over their heads.* Rainy days, 15, 18, 27,**** with tremendous thunder and lightning, accompanied with

heavy gusts of wind; 13, 16, 28, 29, 30, 31.** Unhealthy.

Therm. H. 90° } A. H. 88½.
L. 82° }

JUNE commenced as May terminated, with frequent showers, attended with more thunder and lightning than I ever knew in Demerary. Rainy days, 1, 2, 14, 24, 25,**** mostly at night; 13, 15, 26, 27, 28, 29; *** 20, 21, 22, 23,* attended with thunder and lightning in almost every one of them. Cool nights, heavy dews, and unhealthy among strangers.

Therm. H. 89° } A. H. 86°.
L. 80° }

JULY.—The weather during this month was similar to that in June. Showers, thunder and lightning were frequent. The clouds assumed a dark heavy appearance in the forenoon, and were accompanied at times with smart squalls from the N. E. Cool nights. Musquitoes very troublesome, as is always the case in wet weather. Rainy days, 4,**** 1, 2, 3, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14,*** 29, 30, 31,** 19, 20, 21, 22.*

Therm. H. 89° } A. H. 85½.
L. 80° }

AUGUST was ushered in very hot and sultry. Had several small showers the first part of the month. The trenches emitted a very obnoxious smell. 24**** with uncommon heavy thunder and sharp lightning in the night; 11, 12, 25, 26.***

Therm. H. 91° } A. H. 87°.
L. 84° }

SEPTEMBER commenced very hot and sultry. 8,*** and we experienced with it the most tremendous clap of thunder, and the most vivid flash of lightning, I ever knew in any country, at six o'clock in the morning. It struck an English merchant-ship lying at anchor in the river nearly opposite the fort, and carried away her main and main-top-masts. 21st we experienced a smart gale of wind from the N. E. at night. The tides laid the town nearly all under water. It was a little showery during a small part of the 23d, 24th, and 30th days.

Therm. H. 91° } A. H. 88°.
L. 85° }

It has been already observed, that the seasons of the years 1803 and 1804 were very irregular, as will readily be

perceived by comparing the history of the weather that has just been recited, with the seasons, as above delineated when regular.

The following account of the symptoms of the *Yellow Fever*, is precisely as they occurred to me in my practice in the West-Indies, without noting the accidental symptoms and other fortuitous circumstances that may have occurred to others. It is therefore my principal object to exhibit an account of my own practice, supported by actual experience; for, to adopt the words of an ingenious *author*,* "as the result of experience is the only useful knowledge in physic, every interesting fact founded thereon, should be rescued from oblivion." The symptoms of this dreadful malady, so fatal to thousands who migrate from cold climates to tropical countries, have been, however, minutely delineated by the author just alluded to, and ROBERT JACKSON, M. D. Nevertheless, a faithful and accurate history of the appearances which it assumed in the colony of Demerary, more particularly in Stabroek, appeared to me not to be uninteresting; especially as this fever is differently characterized in different climates; as is made manifest from a critical examination of the various *authors* who have written on the disease in question, both in the United States and in different parts of the West-Indies.

There has been considerable altercation among the faculty, whether this fever is of a *peculiar genus*, or whether it is only a *more vehement grade of the common Endemic of the climate;* the different symptoms of which are in a great degree dependent on the peculiar circumstances attending all foreigners, when compared with natives; such as difference of constitution, climate, manner of living, &c. But to the former opinion I cannot fully assent; and that for the following reasons, of the truth of which as facts, I am fully persuaded.

1st. Those who are seized with this fever immediately after their arrival in the West-Indies, and who have not been inured to a tropical climate, have it by far the most severely; and a difference in alarming symptoms is evidently manifest. But after one attack in this manner, if the patient becomes a resident in the colony, these violent symptoms seldom or never recur: the patient is but slightly affected; or in other words, his fever is the *common endemic* of the country.

2dly. It never attacks the inhabitants of tropical regions,

* BENJAMIN MOSELEY, M. D.

nor does it lay hold of the *African* * *new comer; though both belong within the tropics: nor is it common that any person has it twice, unless he returns to a high northern latitude and remains there some considerable time, and then revisits the tropics again.* It may also be remarked, if native inhabitants of the tropics reside any length of time in a cold climate, and afterwards return to the TORRID ZONE, they are very liable to become the subjects of this disease.

3dly. The *remittent endemic* fever, when it rages with malignancy among that class of people called *Creoles*, is sometimes marked with symptoms that are common to the yellow fever, such as *profuse bleeding at the mouth, vomiting of blood, and a yellow tinge of the skin.* But it must be confessed that these three symptoms rarely occurred, and never happened to the same subject; although I have seen all three of them in different patients, at different intervals of time.

From which premises, it appears to me, *that the very same causes generate the endemic fever of the West-Indies and the yellow fever.* But the origin of their different symptoms must be sought for in the varying diathesis of the solids, and those daily changes, which a northern constitution is known to undergo. At no time has my residence in the West-Indies been of so permanent a nature, as to afford the means of definitely determining the possible influence that climate has on the constitution. More experienced physicians may hereafter determine these questions. But this may be stated as a fact, that a small dose of mercury given to a native frequently alarms the physician by an unexpected ptyalism; while foreigners are only affected by the same quantity, in the same mode, as is common among the inhabitants of cold climates.

Memory furnishes, among other instances, the particular case of a young Creole lady, whose complaint was an obstinate *constipation of the bowels.* Aloetic preparations were administered, as well as castor oil, &c. which did not produce the desired effect. At length 7 grs. of calomel were administered. This medicine, some days after the alvine tube was cleansed, produced so great a flow of saliva, that life itself was in the most imminent danger. The discharge of black fœtid blood and spittle from the salivary glands,

* The NORTH AMERICAN NEGROES were however no more exempt from this fever at Demerary, than the Whites from a cold climate. Its attack was of equal violence and as frequently fatal.

gums and fauces, was so copious as to excite fainting fits. The organs of speech were inflamed and tumefied to such a degree, that speech was unintelligible and deglutition almost arrested. Laudanum and the most powerful astringents, with an epispastic applied on the back of the neck, were insufficient to restrain the flow of saliva, until eight or ten days had elapsed.

This fever rages as an *epidemic* principally in the dry season, though sometimes during the wet, in that colony among *new-comers* from higher northern latitudes. It made shocking havoc, in point of numbers, among the Dutch soldiers* and seamen at the commencement of the year 1803, immediately after the colony was given up by the British to the Dutch, agreeably to the treaty of AMIENS; and also among the British and American seamen, soon after the colony was retaken by the British in the same year. It may in truth be said, that "They fell unblessed, untended, and unmourned."—I was frequently reminded of the following lines of the late DR. DARWIN in his Botanic Garden.

> When o'er the friendless bier no rites were read,
> No dirge slow chaunted, and no pall outspread;
> While death and night piled up the naked throng,
> And silence drove their ebon cars along.

The afflux of strangers to Demerary at those two periods was immense, which no doubt was the cause of its being more prevalent. When a few individuals only were attacked, the fever was less malignant and the danger consequently less. It was more particularly mortal among foreigners of sanguine habits and rigid fibres, and especially to *soldiers and seamen* who were subjected to hard labour, and exposed to the action of the solar rays; and who afterwards cooled themselves suddenly by plunging into the water, or by chilling breezes of air, or being accidentally caught in a shower of rain. These sons of MARS and NEPTUNE might with propriety have repeated the words of Æneas, as he did, soon after he landed on the CRETAN shores, to wit.

> ———Subito cum tabida membris,
> Corrupto cœli tractu, miserandaque venit

* The uniform and clothing generally of this class of people could not have been more injudiciously chosen than theirs was for a tropical climate. Their hats were black and had very little or no rims to them, the absence of which admitted the sun's rays directly upon their faces. Their apparel was infinitely better adapted to the climate of NORWAY or SWEDEN in the month of January.

Arboribusque satisque lues, et letifer annus.
Linquebant dulces animas, aut ægra trahebant
Corpora: tum steriles exurere Sirius agros.†

I am confidently of opinion that this fever is not communicated by *contagion;* as no person living in the same house with the *infected* or the physicians or attendants, was ever known to take it, unless they happened to be strangers and thus predisposed to the fever. If any person sickened in the town of STABROEK, and was afterwards removed into the country on a plantation, nobody was ever known to be *infected* from him.

I never heard it suggested by any of the faculty residing in Demerary, that they ever supposed the yellow fever to have been *imported* into that colony.

The more robust and sanguine the persons were, the more habituated to animal food and spirituous liquors, and the more exposed to solar heat, so much the more liable they were to take this fever: Hence the English, American and Dutch seamen, as well as the English and Dutch soldiers, were most frequently, as well as most violently seized with this malady; and one material cause* of this may be traced to the *filth and nastiness that American vessels, particularly, collect from their cargoes on their outward-bound passages; which cargoes are composed principally of salted fish, meats, both dry and pickle-salted, lard and butter, cheese, onions, potatoes, live stock, such as oxen, horses,* &c.

Women and infants, the aged, the feeble, emaciated, light livers and light workers, are attacked less dangerously than those habits just enumerated. Officers among the troops, and commanders of vessels, are favoured with more mild symptoms, and their convalescence is much shorter than common soldiers and sailors: and this appears to result, 1st. from the latter undergoing much severer fatigue, and 2ndly. they seldom apply for medical aid, until it is too late; conceiving they have only caught a *common cold.*

Experience has taught me to divide this fever into two

* Virg. Æn.

† Sleeping in the open air by night and especially in the *moon-shine;* intemperance in new undiluted rum; acid drinks long persisted in; eating of tropical fruits to excess; long exposure to wet or damp weather or sleeping in wet clothes; constipation of the bowels; bad water, fear, anxiety of mind; filth or nastiness attached to the body or clothing of persons, &c. are not among the smallest exciting causes of this fever.

grades, viz. the *malignant* and *mild:* acknowledging at the same time, that these distinctions will not always hold good; as the mildest form sometimes degenerates into the most malignant. The principal difference that exists may be found in the greater violence of the symptoms which occur in the first stage; in the frequency and strength of the spasmodic affections of the second, and in the rapid transit of the second into the third and last stage. The true causes of all these variations are to be sought for in the difference of different constitutions; and in the PARTICULAR GENUS of the prevailing epidemic, which has a natural tendency, either to an *inflammatory* or *spasmodic* form.

(To be continued.)

OBSERVATIONS ON MERCURIAL SALIVATION; *in which an attempt is made to obviate some of the objections urged against this remedy.* BY DR. AARON C. WILLEY, OF BLOCK ISLAND.

AMONG the great variety of agents which medical science employs in arresting the disorders of the human frame, Mercury justly claims a very high rank. Such is the wonderful power of this active substance over the morbid derangements of organic life, that it may not improperly be considered as in some measure superseding a great part of the materia medica now in use. Other medicines, though of drastic nature, are more limited in their operation, more confined to particular maladies; but this, with superior sway, resists, with *some* success, the greater portion of diseases incident to man. But extensive as is the present use of this invaluable article of the healing art, yet experience is daily enlarging its bounds, and gaining an ascendency over the "congregated legion of ignorance and prejudice," which have unceasingly assailed it from its first discovery.

There is a diversity of methods of using this medicine, with salutary effect; but no mode, I believe, has met with more opposition than that which is the subject of the present communication. The idea of salivation frequently alarms the vulgar and superstitious, and fills the mind of credulity with fantastic and fearful apprehensions. But happy would

it be for a vast number of the human race if these chimerical notions ended here. Instead of this, they extend, with equal predominance, to many of the faculty. The prejudices of some of our physicians are as strong against ptyalism, as of those who have imbibed their uncouth ideas from the fireside-stories of their grandmothers, or the fabrications of designing quacks. I have listened to an hoary-headed son of Æsculapius while he anathematized salivation, and the use of mercury generally, as an impious and unpardonable species of medical heresy: but his arguments were like the ideot's tale,

"————Full of sound and fury,
Signifying nothing."

Salivation has long been known; but the knowledge of its most important efficacy, is, I believe, of recent date. Our ancestors never dared to use it in many of those cases where modern practice employs it with great success. In former times, it was chiefly confined to *lues venerea*. But in this it is now found sometimes unnecessary.

One of those diseases in which salivation is employed with distinguished benefit, is the *Synochus Icteroides*, or *yellow fever*. Hundreds who are now enjoying the blessings of health, owe, in my belief, their terrestrial existence to this peculiar operation of mercury; and as many more, who are now tenants of the mansions of rest, might probably have been in the full fruition of life, had this affection of the mouth been excited before the day of medical grace was forever past.

Several medical writers have controverted this method of endeavouring to obviate the fatal tendency of malignant fevers; but none, that I have seen, has advanced any thing of sufficient validity to induce me to change the opinion I have formed respecting its important efficacy. My faith is founded upon the firm basis of experience, and supported by the united testimony of many respectable physicians. To facts I pay unbounded homage. These are the foundation of all systematic knowledge; on these alone can theories, with any degree of certainty, be built.

Some of the objections brought against salivation are, that ulceration and gangrene sometimes occur; that hemorrhages sometimes attend; or that a "sudden revulsion of the inflammation and fluids may take place into other viscera, and

cause certain death." But if we are to permit such objections as these to deter us from the use of a remedy, most of our important ones must, in like manner, be discarded; and the patient, under an inert practice, languish life away, without an effort to snatch him from the jaws of approaching death. According to this strain of argumentation, we must reject the use of epispastics, because they sometimes are followed by obstinate and painful eruptions, and sometimes terminate in dangerous mortifications. We must likewise abandon emetics, because they sometimes induce dangerous spasms in the stomach, hæmoptysis, general convulsions, or a puking which ceases but with death. But the futility of such reasoning is obvious, and can have no weight in deciding a question of this nature. With respect to gangrenous sores and hæmorrhages, the former, I believe, but seldom occur where a real salivation takes place, and the other as rarely happen. I have never met with either in my practice. Indeed there is no necessity of pushing the salival inflammation so far as to endanger the occurrence of either of these unpleasant symptoms. A moderate affection of the mouth generally succeeds; nor have I ever had occasion to go beyond the ordinary bounds. With respect to the "revulsion of inflammation," &c. such a thing "*may*" occur, but I have never heard of a single instance of the kind. I conclude, however, there is little danger of such a circumstance occurring; hardly enough to merit notice. But when these objections, even were they ten times more cogent, are put in competition with the critical situation of the patient, and the chance of immediately obviating danger by ptyalism, they

> "Are melted into air,
> And like the baseless fabric of a vision,
> Leave not a wreck behind."

Another objection is founded upon the well known fact of syphilis yielding often nearly as well to mercury, without inducing salivation. But this is no solid argument that salivation possesses no superior efficacy in malignant fevers. Violent febrile commotion differs as widely from venereal affection, as *pneumonia* from the *itch;* and because vesicatories are of no service in the latter, shall we consequently say that they are useless in the former?

Other objections have been brought forward by Dr. *Wheaton*,* of Providence, (R. I.) This gentleman is strongly opposed to ptyalism, and the use of mercury generally. His reasons for rejecting the mercurial treatment are summed up in three propositions, each of which we will separately examine.

1. "In all bad cases of yellow fever, the mercurial action cannot be seasonably excited." Does he here mean that in *every* bad case which occurs, or in a *part* of them only, the "mercurial action cannot be seasonably excited?" If he means the former, he is manifestly contradicted by common experience; if the latter, I readily subscribe to the truth of the assertion, but at the same time deem it an insufficient argument in his favour. Because a medicinal agent does not invariably produce its usual effects in due season, or before it is prevented by the extinguishment of life, shall it be entirely abandoned? This does not appear to be sound logic. Cases of *bilious cholic* frequently occur, in which the most powerful cathartics fail to open the bowels, before death closes the melancholy scene; shall we therefore forbear to exhibit purgatives in this disease? The Doctor himself, I presume, would hardly agree to this. Then why reject salivation, merely because it cannot, in *every* case, be "seasonably excited." We may as well discard the employment of all kinds of medicine, in diseases, because they many times fail to exert their power in sufficient season to arrest the shaft of mortality.

2. "The immediate use of calomel seldom fails to irritate the stomach, to aggravate the sickness and distress, and in this way, if I mistake not, has in many cases, aided in exhausting and destroying the patient." I cannot but think that the word "*immediate*" is a typographical error, and that *immoderate* was the term intended. But, however this may be, I cannot fully coincide with him in opinion. I never witnessed any peculiar tendency this medicine possesses to irritate and oppress a sick stomach, when discreetly exhibited. Every remedial substance whatever is liable to "aggravate the sickness and distress" at certain times, or when indiscriminately and immoderately employed. But this does not warrant their total rejection. There are many cases in which the stomach is disposed to inverted

* Vide Med. Rep. Hex. ii. vol. iv. p. 338.

action by previously existing causes. In these, an inattentive observer would, perhaps, unjustly charge the retching to the medicine alone; but the skilful practitioner ought to endeavour to investigate and remove or obviate them as much as possible. If the proneness to nausea depends upon any offending material retained in the stomach, the puking which may happen to be induced by calomel will commonly prove salutary. Upon the whole, I am inclined to believe, that if mercury ever did aid in "exhausting and destroying the patient," it must have been in some degree owing to the indiscretion or inattention of the physician.

3. "In those cases where the mercury has shown its peculiar action, I suspect it has been precisely when the disease began to subside, and when such action should be considered rather the consequence than the cause of convalescence." This, however, is merely *suspected;* and to be sure, the case he relates, if solely relied upon, would afford him reason for such suspicion.* But a solitary case in medicine never ought to decide our belief. Anomalous instances frequently occur, from which it is difficult to draw any just or decisive conclusions. A number of similar facts are requisite before we can be authorised to form fixed opinions in opposition to those already established upon apparently solid grounds. This case, I believe, is explicable upon principles which harmonize with the doctrine I am endeavouring to support; as will be attempted in a subsequent page. If salivation is the "consequence" of "convalescence," then the signs of convalescence ought always

* The following is the case alluded to, and which is here cited for the benefit of the reader who may not have had an opportunity of perusing Dr. *Wheaton's* dissertation. "In the year 1800, when we had the second destructive visit from the yellow fever, I was called to attend a gentleman attacked with this disease. After bloodletting and a cathartic, I put him upon the usual course of calomel in small doses, which were continued through the second and third days of his illness. On the 4th, what has been called the second stage of the disease commencing, hemorrhages at the nose, mouth and ears came on, with extreme yellowness of the skin, and marks of great debility. As I had little hopes of saving my patient by persisting in a practice which had in other cases recently failed me, I put him upon a course of bark, wine and ether, applied a large blister to the epigastric region, with much effect, and directed the frequent use of lavements. He took his medicines in often repeated doses, and with great freedom; the retentive power of the stomach being assisted by occasional small doses of laudanum. On the 8th day, he showed some signs of amendment, which improving until the 11th, a moderate ptyalism then first appeared."

[Med. Rep. Hex. ii. vol. iv. p. 338-9.]

to make their appearance *first*. This, however, I have never perceived to be the case; and I imagine that many others have been as unfortunate, in this respect, as myself. On the contrary, when every symptom has been alarmingly increasing, I have frequently seen a sudden abatement of the disease immediately succeed the appearance of ptyalism. I have many times announced to the patient's friends the probability of recovery, when no sign of amendment was visible but the incipience of mercurial affection in the mouth.

It has been said by some that the proportion of deaths is as great among those physicians who salivate as those that do not. But this is a mere assertion; an assertion calculated to mislead the mind which but imperfectly examines the subject. In order to determine this with any degree of certainty, particular attention must be paid to various local and concomitant circumstances, and especially to the proportion to which mercury is exhibited in order to salivate, to the number in which it fails, with the probable cause of this failure, as dependent upon idiosyncracy visceral derangements, stage of the disorder, &c. &c.

But the most decided answer to all objections are naked facts. To these I recur as a conclusive argument in support of the beneficial effects of the salivating treatment. The following are some of the few, which are now before me, selected out of the many recorded on the pages of medical history.

1. Dr. *Rand* in his account of the epidemic at Boston, in 1798, informs us that "upon the appearance" of ptyalism, "the dangerous symptoms vanished;" and that there was "scarcely any patient, when the effects of the mercury upon the salivary glands were evident, but what recovered."*

2. Dr. *Monro* in his "remarks on the epidemic of the summer and autumn of 1798, at Wilmington (Delaware) observes, that "where the mouth could be made sore with mercury by the third or fourth day, he did not recollect any instance of mortality, unless in one case, where the patient had before suffered from a long continuance of syphilitic affection.†

3. Dr. *Kollock* in his "account of the malignant disease which appeared on board the United States frigate General

* Med. Rep. Hex. i. vol. ii. p. 451. 2d ed. † Med. Rep. Hex. i. vol. iii. p. 137.

Green," in 1799, tells us that "large doses of calomel seemed to control every symptom; and when ptyalism could be produced, not *a single patient died.*"*

4. Drs. *Selden* and *Whitehead*, in treating of the yellow fever at Norfolk, (Virginia,) in 1800, remark "that where a free salivation was brought on, the patient uniformly recovered."†

5. Again, the same writers, in their account of the same disease in the succeeding season, note, that "salivation" "was followed by the certain recovery of the patient."‡

6. In an account of the yellow fever at New-York, in 1803, as published in Med. Rep. Hex. ii. vol. i. p. 181, we are told that "whenever a salivation was produced, it was followed by the best effects."

7. Dr. *Hall*, in his letter to Dr. *Mitchill* on the yellow fever at Alexandria, (Virginia,) in 1803, speaking of the use of mercury, explicitly says, "If I succeeded in making my patient's mouth sore, it was a guarantee of his recovery."§

8. Dr. *Benjamin W. Dwight*, in his history of the yellow fever at Catskill, (N. Y.) in 1803, affirms, that "those whose systems became so far affected with mercury as to produce a soreness of the gums, all recovered, and generally in a very rapid manner."‖

9. Dr. *Agnew*, in his "history of the epidemic disease, which prevailed in Adams county, (Pennsylvania,) in 1804, says, "If there was apprehension of the complaint being obstinate, I uniformly impregnated the system with mercury; and when I got this accomplished, I considered my patient as secured from the ravages of the tyrant."¶

10. Mr. *Charles Holt* informs us that in the yellow fever at New-London, (Connecticut,) in 1798, "if the physician, by large quantities of mercury applied internally and externally, could produce a salivation, it was a favourable circumstance, and never failed to prove successful."**

These stubborn and undeniable facts, adduced from domestic sources, are deemed sufficient for our present purpose, without multiplying their number by citing the vari-

* Med. Rep. Hex. i. vol. iv. p. 4. † Med. Rep. Hex. i. vol. iv. p. 336.
‡ Med. Rep. Hex. i. vol. vi. p. 251. § Med. Rep. Hex. ii. vol. ii. p. 21.
‖ Med. Rep. Hex. ii. vol. ii. p. 237. ¶ Med. Rep. Hex. ii. vol. ii. p. 352.
** Vide a pamphlet, giving an account of the yellow fever, as it appeared in New-London, in 1798, by *Charles Holt*, p. 14.

ous other authorities among our American writers, as well as those of the West-Indies, and other places.

I have perceived, in the course of my practice, three apparently different affections of the mouth, which I fear are too commonly confounded under the name of salivation.

The *first* is a soreness and tumefaction of the mouth and adjacent parts, with an increased evacuation of saliva.

The *second* is a spitting without being accompanied by any tumefaction, and generally without soreness, though sometimes the patient may complain of some slight prickings. This is commonly of short duration, sometimes disappearing in the course of an hour or two.

The *third* is a tumefaction of the throat and sides of the mouth, with gangrenous ulcerations; sometimes accompanied with a slight sputation, but for the most part with none. This, according to the true definition of the word, cannot be called salivation; and I very much doubt whether it is always owing to the action of mercury, although this remedy had been exhibited. I have seen cases in which I could not discover the least sign of mercury, and I have likewise met with instances of this affection where mercury had never been given.

The *first* of these is the kind of salivation which I have hitherto found to be a sure guarantee of the patient's life. On the *second*, no dependence can be placed; yet when it continued any time, I have known patients to get well. From the last enumerated affection, I have never known an instance of recovery. I have never seen it occur but in the last stages of the disease, when excitability was so far exhausted, that the patient had passed the point of possible recovery.

I am inclined to think that some of the objections which have been made against salivation, originated from those different affections of the mouth not having been carefully discriminated. It has been asserted that patients die notwithstanding ptyalism. That this is the case in the second, or spurious kind, and in that affection which was thirdly particularized, and which is too often unjustly charged to mercury, I have a number of times witnessed; but of death ever occurring under the *first*, I have not known a single instance. Indeed when this is once excited, I feel not the least apprehension of the patient's life. In my account of the yellow fever in this place, in 1801, I have observed that ptyalism "never failed in but one instance to turn the trembling scale

in favour of life."* But in this case the ptyalism was of the second kind.

It has been observed that the most assiduous efforts to produce salivation are sometimes ineffectual. The cause of this naturally excites inquiry. The following, I believe, is a part of those circumstances which operate in preventing mercurial action.

1. *A peculiar idiosyncracy.* This was noticed by the illustrious *Sydenham* in his treatise on the venereal disease.† That some systems are so peculiarly constituted in their primordial structure, as to resist the impression of particular agents, is a fact confirmed by repeated observations. This shows, that no absolute specific, or determinate medicine exists in nature. In some, opium ceases to induce sleep in whatever form it is exhibited; in others, the preparations of antimony are inadequate to excite the inverted action of the stomach.

2. *Exhaustion of excitability.* There is a certain period in diseases, which once passed, no salivation can be excited. This I take to be an exhaustion of excitability to that degree that it is no longer capable of being roused into action by mercurial stimulus. This period, I believe to be the sure harbinger of death.

3. *Torpor or paralysis of the absorbent system.* That a torpor of the absorbents is unfavourable to the excitation of ptyalism, is a fact which has been observed by many. This torpor may exist either in their bibulous mouths, or glandular portions, or both. It is merely an effect, or adventitious symptom of the disease. Its duration is temporary, and commonly ceases with convalescence. Whilst this continues, an endeavour to excite salivation is vain; but when removed, this affection of the mouth is readily induced. It sometimes happens that, during a torpor of the conglobate glands of the absorbents, the mercury is lodged in the mouths of these vessels, where it remains in some measure, in *statu quo*, being of itself inadequate to overcome the paralysis till it receives the co-operative impression of other agents; or action chances to be restored by the casual variation of excitability incident to the disease; when the salival affection immediately takes place. The occurrence of such cases may lead some to erroneously imagine that salivation is always the consequence of convales-

* Med. Rep. Hex. i. vol. vi. p. 129. † Vide *Swan's Sydenham*, p. 358.

cence, and not in any manner conducive to the solution of febrile commotion. Dr. *Wheaton* appears to be a lively instance of this. In the case he relates, there was undoubtedly a torpor of the glandular parts of the absorbents, too great to be removed by the mercury alone, but which was at length effected by the conjoint agency of the remedies he so judiciously exhibited. This happening to take place after the disease had begun to yield to the remedial powers which had been administered, led him to deduce the inference contained in his third objection.

He says that the mercury, in this case, "had nothing to do with the patient's recovery." This is an unguarded assertion. How can he positively determine that it had no share in overcoming the torpor? If it was insufficient, of *itself*, to restore irritability, it is extremely doubtful if the other medicines would have been equal to its effectuation, unassisted by this remedy. But even granting that mercury in a few cases of glandular paralysis has no share in producing salutary action, it affords but an insufficient argument for utterly discarding its employment. When the chances of saving life by ptyalism are taken into serious consideration, such solitary and equivocal instances as this should be received with the utmost caution.

CASE OF SINGULAR CONVERSION OF DISEASE; *communicated to the Editors by Dr.* SCHOOLFIELD, *of Portsmouth, Virginia.*

JOHN KEAN, a native of Dorchester county, Maryland, (attached to the U. S. brig Argus on this station,) of a thin habit, extremely indolent and dirty, aged twenty years, was admitted on board the hospital ship the 4th of March, 1808. He had for some months previous been labouring under tinea capitis, which from his entire neglect of cleanliness, was stubborn. Several days preceding his admission, he had attacks of an intermittent of the quotidian type. As in the intervals he was without fever, a mercurial cathartic was given the ensuing day, 5th. He complained of a difficulty of breathing, pain in his side, pulse small. I applied a blister to the pained part, gave

antim. powd. and infus. sem. lini. 6th. The blister has drawn well; he is better; continues the powders. 7th. He is delirious, pulse quick and small with great debility; in the evening the pulse became tense with acute pain in the breast; venesect. to ℥ x. 8th. His delirium increases, face much suffused and hot, pulse weak, tongue soft and without redness; directed cold applications to the head and

℞ Spir. Mind. ℥ vj.
—— Nitr. Dulc. ʒ ij.
Vin. antim. ℥ ſs. m.

A table spoonful once in two hours, and apply an epispastic to the back of the neck. 9th. The derangement of the intellect was great throughout the night; eyes are much inflamed, pulse quick and small, teazing cough, tongue dry and hard; commenced the use of the hydrarg. pills, for the purpose of procuring a ptyalism; and blisters to the ancles. 10th. Continues restless, his mind is unsteady, the pills operate on the bowels; combine opium with them. The blisters on the ancles have not drawn. 11th. Has a great prostration of strength; directed the use of bark and wine, with mercurial inunction. 12th. The brain still suffers considerably, eyes red, pulse quick but small, tongue moist and inflamed at the edges, coughs occasionally and expectorates a glairy ill-digested matter; the bark is retained by the stomach, but as it has a tendency to produce frequent dejections, added laudanum to each dose; the blisters that were re-applied have risen well. 13th. Eyes more sprightly, tongue of a scarlet hue, pulse small and trembling, intellect still deranged; continue bark and wine. 14th. The appetite is mending; he is less delirious; the aspect of his eyes is yet unfavourable; tongue moist and less red; repeat medicines. 15th and 16th. He is better. 17th. Is very weak; directed the continuance of bark, wine and nourishment liberally. 18th. Has a return of fever; recovers strength very slow; skin hot and dry. 20th. Fever high, dry hot skin, with fiery tongue; continue medicines. 21st. Less fever; he is more collected and cheerful. 22d. A violent return of fever, moans constantly, is quite comatose, pulse small and faltering; ordered bark, wine, chicken-broth and chocolate. 23d. An astonishing favourable change occurred last night; his pulse which was languid became full and soft, his mind resumed its stable and tranquil state, with a return of vivacity; he complained of swelling and pain in his leg; on inspection an erysipelatous inflamma-

tion was discovered extending from the knee to the toes; continue bark, &c. 24th. He rested well and is without fever. 25th. His foot is much swelled, and unpleasant symptoms are disappearing. 26th. Free from fever and quite well. 29th. Foot tumefied, with an effusion of serum of a livid colour; ordered the following cataplasm:

℞ Pulv. Cort. Peruv. ʒj.
Carbon. ʒiv.
Sem. lini ʒij. m.

to be stewed on the fire to a proper consistence and applied warm frequently. April 1st. The inflammation in the foot has subsided. 3d. The foot has suppurated. 5th. The foot has assumed a healthy appearance; for the first time he complains of the mercury's affecting his mouth; appetite good; mind firm; and in fact every symptom of disease has disappeared.

Case of Obstinate Diarrhœa, *in which the good effects of* Sugar of lead *were very evident: In a letter from* Mr. William Mayell *to* Dr. Mitchill.

Sir,

I HAVE received much pleasure, and in one particular instance, an unspeakable benefit, from reading the Medical Repository. No. 3 Vol. 3d of that work, contains a letter from Dr. Archer junr. of Maryland, including one also from Dr. Harris, which gives an account of the good effects, in several instances, resulting from the internal use of the sugar of lead in cases of diarrhœa.

Sugar of lead is considered by chemists and others as a violent poison, which is no doubt true when taken in large quantities; but the letters of Drs. Archer and Harris, and the use of it in my family, convince me it is less poisonous than is commonly imagined, and that it may be administered with prospect of success in cases of diarrhœa, and perhaps other similar diseases.

My particular design in writing this, is, to give you, as well as I am able, the history of a case of diarrhœa, and of the cure which I think was effected by the internal use of sugar of lead.

In the summer of 1807 Mrs. M—— aged 36, in the seventh month of her pregnancy of the sixth child, was taken with a looseness; but as she had been afflicted with the same disease almost every summer for several years, it was not very alarming. She took frequently doses of magnesia and rhubarb, and also drank pretty plentifully of the solution of phosphate of soda, which she supposed had given relief on former occasions, without receiving any benefit. She was next violently attacked with the influenza that so generally prevailed in 1807. The family physician was then called in, who prescribed some powder from which she obtained relief from the influenza; but the looseness still continued. She continued to take the solution of soda until the time of her delivery, which took place on the last day of August. The child, contrary to what was expected, was a very fine one, and during three days after her delivery she was rather costive; so much so that the physician began to think that it would be necessary for her to take some castor oil. She was otherwise as well as she had commonly been in like situations. After three days the looseness returned with increased violence. She then took opium in pills, and afterwards the decoction of bark and laudanum, from which she received no benefit. Powders consisting of nutgalls, starch and nutmeg, were also inefficacious, as was also carbonate of potash, of which she took plentifully.

The strictest attention was paid to diet. Almost every kind of food was provided that was supposed to be beneficial, such as sago, milk thickened with flour, &c. and though the patient had no real appetite, her desire to live for the benefit of her family induced her to take food when, if she had been governed by her feelings, she would not have taken any. Though she had no real appetite, she often felt an emptiness, from which food in some degree relieved her. During the whole time of her illness, she complained of a sore mouth and throat, and internal heat. She had been ill between three and four months, and had not received any benefit from the means that had been used to effect her recovery, when the physician mentioned a similar case, in which he had seen good effects resulting from salivation; but he feared his present patient was too weak to undergo such an operation. It was in consequence delayed several days. As neither the patient, myself, nor friends had any hopes of recovery, I was willing and desirous, and so was the patient, that mercury should be tried. Before the physician had

mentioned the case in which mercury had effected a cure, I observed to him that sugar of lead had been successfully used in some cases of diarrhœa. He considered it as a doubtful and dangerous medicine, and I submitted to his superior judgment. The mercurial course was resolved upon. The patient took for several days mild mercurial pills, without the desired effect. Indeed she thought they rather increased the disorder. The pills were disused, and recourse was had to mercurial ointment, which after using three times produced salivation, and as soon as the patient's gums began to be sore, the disorder gradually abated—her stools became natural, her strength increased, and for about four weeks she appeared to be in a fair way to a perfect recovery; but to our great disappointment, the disorder returned with all its former violence, and with it her former debility. Carbonate of potash was again tried; and what I suppose would be called a nostrum, which was the skin of fowls gizzards, reduced to powder and infused in port wine. These produced no good effect. I then resolved, with the cordial consent of the patient, upon trying sugar of lead without consulting the physician. Before I entered upon the experiment, I re-perused the letters of Drs. Archer and Harris, and found my hopes of success increase. Sugar of lead was given in doses of two grains, mixed with syrup, three times a day. On the third day towards evening, some good effects were perceptible. On the fourth day, two doses only were administered, and the disorder evidently abated. In two or three days, the disorder appeared to be completely conquered, and the medicine was discontinued. It however made occasional returns for a week or ten days; but by administering the sugar of lead in doses of two grains twice a day, and sometimes only once, according to the prevalence of the disease, it at last was completely conquered, and the patient very rapidly regained her former health and strength, after having been ill about five months. She has since had no returns of the disorder, and now enjoys as good a state of health as she ever did. About the time she was salivated, her milk entirely failed, and the child was consequently weaned; but after she regained her health, the milk returned, and the child was again put to the breast. The child had entirely forgotten how to suck, but by frequently applying the nipple to her mouth for several days, she again learned to suck, and is now in a thriving way.

Observations *on* Phthisis Pulmonalis, *or Consumption of the Lungs; communicated by Dr.* Joseph Young, *of New-York, to Dr.* Mitchill.

(Continued from page 144, and concluded.)

CONSUMPTIONS are frequently produced by a rupture of a blood-vessel in the lungs. If the patient is plethoric, his feet and legs should be well bathed in warm water, and a few ounces of blood taken from the saphena, and not repeated unless the hemorrhage is very profuse.

He should then use a powder composed of five drams of double-refined sugar, and one of purified nitre, divided into ten doses, one of which should be taken, in a small glass of water, every second or third hour, according to the urgency of the symptoms, until the hemorrhage abates, and then only *one*, at bed time. The feet and legs should be frequently examined, and if they are cold and dry, they should be bathed in soft warm water, and kept very warm.

He should receive the warm vapour of a tea of mullein-flowers, through Mudge's inhaler, or the inverted tube of a funnel; and when it cools, sweeten it with honey, and give a wine-glassful every second or third hour. The following linctus must be taken to promote expectoration, to bring up the extravasated blood, and thereby prevent ulceration. Pare down pure spermaceti ʒ ij. in very thin shavings; melt it with an equal quantity of pure honey, with a very moderate heat, and when it is about milk-warm, add ʒ iſs. or ʒ ij. of balsam capivi; and stir it constantly until it is cool, to prevent the ingredients from separating. The bulk of an hazelnut may be taken every second, third or fourth hour, as circumstances may indicate. I have never known this mode of treatment to fail; but if it should, draw a strong infusion of red roses, in boiling hot water like tea; sweeten it with loaf sugar, and add 60 drops of the elixir of vitriol to eight ounces of the infusion; shake the vial smartly, and give a table spoonful every fourth hour, and if it does not check it, repeat it every third or every second hour; but discontinue it as soon as the hemorrhage is checked; as a too free, or long continued use of it, might coagulate the lymph, and by its astringency increase the cough by locking up the extravasated blood that may have insinuated into the cellular substance of the lungs, and by stagnation produce ulceration. All astringents are to be

avoided in this stage, unless it be to prevent instant death from the loss of blood. In about eight or ten days, if the violence of the cough is assuaged, and no clear blood is brought up, the bulk of an hazelnut of the balsamic electuary may be taken every third or fourth hour, during the forenoon, and the linctus and the mullein-tea in the evening; and if the patient awakes, and if he is feverish, one of the powders at bed time, and repeated every fourth hour during its continuance, but no longer.

Phlebotomy and every thing that weakens the patient should be avoided, as it is evident, that the more the patient is debilitated, the *cooler* he will be in the *forenoon;* his *fluids* more *inspissated*, and more of the *pyretos retained;* and, in consequence, both the *cough* and *fever increased* in the *evening*. I have known practitioners who have taken blood from their consumptive patients, and perceiving this inspissated matter upon its surface, supposed it to be what has been termed inflammatory buff, and attempted to reduce it by small repeated bleedings, by which means they reduced the natural *heat* and energy of the system to such a degree, that there was not sufficient power left to produce any *feverish heat*. The practitioner now conceived that he had gained an important advantage, and exulted that he had vanquished the *fever* and night *sweats;* and flattered himself that the danger was now over. But alas! the *cough* continued, and increased, both in frequency and violence; and the inspissated fluids being no longer *attenuated* by *heat* and *motion*, began to stagnate and swell the feet and legs; and a colliquative diarrhœa closed the scene!!!

When a strong athletic person has caught a cold which produces a cough, with a hard full pulse and feverish heat, preceded by a chill and pains in the breast, phlebotomy becomes absolutely necessary; but care should be taken not to reduce the *pulse* and *heat* below the healthy standard; for all extremes will produce morbid effects. If his skin be hard and dry, he should be put into a warm bath of rain or other soft water, and have his skin washed very clean and go immediately into a bed well warmed, and take 40 or 50 drops of spirit. nitri dulcis every third or fourth hour, in a tea of spice-wood-bark of moderate strength, or a tea of mullein-flowers, or if neither of these can be obtained, a tea made of wheat-bran or posset-whey. The *tea* of *mullein-flowers* is probably superior to any thing that has yet been discovered. It should be sweetened with Spanish honey,

and while it is pretty warm, the vapour should be drawn into the lungs through Mudge's inhaler, or the pipe of an inverted funnel; and when it is cool, give a wine-glassful every second or third hour. By receiving the vapour of this tea in the above manner, and taking a wine-glassful every half hour, with 20 or 30 drops of spirit. nitri dulcis in each glass, the mild croup will often be cured in three hours. After the adult patient has been bled and bathed as above directed, if his skin should remain dry, and he has any pain or oppression in his breast, a smart epispastic should be applied opposite to the seat of the pain; and after it is removed, a constant irritation should be continued by dressing with a stimulating ointment, until the internal pain ceases. Epispastics attenuate viscid fluids, and promote both perspiration and expectoration, by which, and by revulsion, they drive the *pyretos* from the part in *pain* to the part stimulated by the flies, agreeably to an invariable law of the animal œconomy, by which the *pyretic* portion of the spirits will rush to any part that is stimulated, in a degree above that which the part has been used to bear. (See the Treatise, page 82, 83 and 84.) Those who use but little exercise are most liable to suffer by an accumulation of the *pyretos*, in particular parts, which produces very painful spasms that are frequently obviated or relieved by gentle exercise; as muscular motion requires a supply of spirits to actuate every muscle, to perform the actions that are dictated by the will, and thereby prevent the preternatural accumulation in any particular part. This being the case, it is evident that as long as consumptive patients are able to walk, they should never sit longer at one time than to rest, to wit, 15 or 20 minutes, and then get up and walk a few times through the room, and so on through the day. If they neglect this advice, they have but little reason to expect to recover. They should avoid getting cold in the forenoon, as the certain consequence must be an increased *cough* and *fever* in the *evening*.

The discovery which I made relative to that law of the animal œconomy, upon which my theory of *spasm* and *revulsion* is founded, is the result of experience in my own person, and strict attention and observation for more than forty years, which have confirmed the opinion I at first formed in numberless instances. I had previously adopted the Boerhaavian theory of the cause of *pain*, to wit, that

it was caused by such an extension of the fibres, that they were nearly on the point of breaking.

It happened either in the fall of 1761 or 1762, that I had rid almost all day in a drizzling rain, my boots were wet and my legs cold. I was wakened in the night with a most violent cramp in my left leg; and as it was the first I ever remember to have felt, I expected to be *lame*, and unable to travel next day. But the pain abated and I slept until day. I recollected having had the cramp, and my dread of being lame. I began to examine my leg, and was agreeably surprised to find it entirely free from any uneasy sensation. I began to reflect and reason on the subject, and finally concluded that it was very improbable that if these fibres had been almost lacerated in the night, they would now be perfectly free from any uneasy sensation, even when roughly handled. After carefully revolving the subject, I concluded that, as *sensation* depended entirely upon the animal spirits, it must follow as a natural consequence, that when they were redundant in any nervous part, they would produce a degree of *supersensation* and *pain*, in proportion to their quantity and activity; as a small application of *fire* will *warm* us most agreeably, but a greater degree will *burn* us. Upon this principle the doctrine of inflammation is founded; for without *fire* there would be no *heat*. This mode of reasoning appeared to be conclusive, but I wished for experimental confirmation. An opportunity for this purpose happened in a few weeks. I was awakened in the night with a severe pain in the left side of my breast, which was aggravated by respiration; on recollecting the opinion which I had formed, I took the skin opposite to the part in pain between my fingers and thumb, and pinched and wrung it, and in less than twenty minutes the pain ceased, I fell asleep, and felt it no more.

But these internal spasmodic pains, should (if possible) be quickly removed by *revulsion*, or the preternatural flux of *spirits* and *fluids* to the *part*, will produce *inflammation*, with all its dreadful consequences.

Opium, as a diffusible stimulant, acts by *revulsion*, dispersing the spirits equably throughout the system, and may in *recent cases* of violent *pain* be safely given, except to *plethoric* patients, with a *hard full pulse*, and *heat* above the healthy standard. But while the opium *suspends* the *pain*, other means to prevent its return should not be neglected, such as going into a warm bath of soft water, or, if this cannot

conveniently be done, the *part* should be *fomented* with an infusion of bitter herbs, drawn with soft boiling water, to which a pint of spirits should be added; and then a strong epispastic should be applied opposite to the seat of the pain. The patient should now receive the warm vapour of an infusion of mullein-flowers into his lungs; and when it is yet warm, sweeten it with honey, and give a wine-glassful every second or third hour, with thirty drops of spirit. nitri dulcis. But although the pains and every uneasy sensation may cease, the patient should cautiously avoid exposure to the cool air, or drinking any cold liquor for some days. If these directions were punctually followed in time, we should hear of but few consumptions.

But as the prevention of this destructive disease is preferable to the best methods of curing it, it is of importance to point out some of the causes which produce it, especially with respect to females. The first I shall mention is a combination among the shoemakers; who appear to have resolved, that as the ladies gowns have no *bodies*, their shoes should have only the semblance of a *sole*, but so narrow that half an inch of the vamp comes to the pavement at every step, and admits the water very freely. Secondly, I must mention the pernicious effects of their *bodyless gowns* without *sleeves*. When a lady rises in the morning, she dresses comfortably, probably in a gown with long sleeves; but Mrs. A. receives the following polite card from Mrs. B. "Mrs. B. presents her most respectful compliments to Mrs. A. and (having invited a few select friends) requests the pleasure of her company to spend a sociable evening." The weather is cold and damp, but Mrs. B. cannot think of entertaining company in the common room; and about half an hour before the visitants are expected, a fire is kindled in the best parlour, which had been well scrubbed in the forenoon; and to have all things compleat, the carpet is laid down before the floor is dry. The time draws near. Mrs. A. retires into a cold room to dress, and as a suitable substitute for the warm morning dress, adopts thin book or cambric muslin, with short wide sleeves, and other corresponding articles of dress! The neck and breast are bare, or covered with very thin gauze, and the arms naked almost to the shoulders. If the breast is left open to facilitate the entrance of Cupid's *darts*, it affords a more certain *mark* for the *envenomed shafts* of the *grisly king* of *terrors*. A muff and tippet may be worn in the street, but are laid aside

before the room gets warm. But Mrs. A. is bedecked in a suit much better adapted to the month of August than December; she looks out of the window and observes that it has rained, and that the streets are very wet, but no matter; the walks are pretty dry, and it is but a step. Madam sets off, and gets her feet wet. When she arrives, the fire just begins to blaze, the room is cold and damp, but off goes the muff and tippet; her *feet* are *wet* and *cold*, but politeness will not permit her to dry them; she sits shivering until the fire has warmed the room. The company having all arrived, the warm tea is served about; which, with the *heat* of a crowded room, opens the pores and produces a copious perspiration. At length the company breaks up, and the visitants return home through the damp night air, and find many of their fires extinguished and the rooms cold; they go shivering to bed, and are awakened in the morning with a most violent *cough* and *hoarseness!!*

The Deity has mercifully adapted the human constitution to bear very considerable extremes of *heat* and *cold*, but the changes from one condition to the other must be gradual; as all sudden changes either from *heat* to *cold* or from extreme *cold* to *heat*, are attended with imminent danger, for the reasons assigned in the 119 page of the *Treatise*. When a warm morning gown, with long sleeves and a shawl, is exchanged for a thin *muslin* without *sleeves*, and a gauze handkerchief, the change is too great and too sudden to be borne with impunity; and any person who considers the circumstances can be at no loss to account for the frequency and fatality of consumptions. Here is *fashion* exhibited on one side, attended with *disease*, *death*, and *desolation*; and common *prudence* on the other side, promising *health*, *pleasure* and *longevity*, submitted to the *choice* of rational beings.

A CASE *of* CROUP, *which terminated favourably under the treatment of* SQUILLS *and* MERCURIUS DULCIS; *accompanied with remarks and observations: Communicated to the Medical Society of the county of New-York, by* JACOB V. BROWER, *M. D.*

A MALE child eight months old, of a muscular, robust habit of body, on the third of June, 1808, about the fifth day of sickness, and the third day after it had become serious and alarming, was found labouring under the following symptoms: great restlessness, and an almost constant desire of motion and of going from the arms of one person to those of another; a rattling noise in the air passages, both in the act of inspiration and of expiration; paleness of the countenance, except when the cough lasted for some time, which produced a flush over the face, together with a short fit of crying. Single efforts of coughing, which occurred between the paroxysms, did not produce any alteration in the paleness of his countenance. He had also great heat and dryness of the skin, perpetual thirst evinced by a constant desire for the breast, and a frequent pulse with great throbbing of the large arteries. Has had two days since occasional vomiting with a lax, but is at present costive. The voice in crying was clear and sharp; the cough, though it commenced with a harshness, yet the last impression it made on the ear was a shrill sound. A vomiting came on occasionally, and gave relief in the breathing for some time. I prescribed one teaspoonful of the syrup of squills and one grain of calomel every half hour, till three doses were taken, and then the same quantity every two hours.

June 4th, 6 o'clock, A. M. Has been very restless last night during the intervals of dozing, which lasted only for a few moments at a time. The noise made by breathing appears to be different from what it was yesterday evening; it is a wheezing which has been compared to the sound of air rushing through muslin; that wheezing at present is produced in the expulsion of air from the lungs, and not in the act of inspiration. His tongue is somewhat yellow and dry; and his face is bloated at irregular intervals of time. Other symptoms are the same as those before enumerated. Ordered the tepid bath for ten mi-

nutes, and the medicines every two hours as before directed.

One o'clock, P. M. He is not so restless, and to every appearance is better; has had since this morning two or three turns of getting better, and then soon after worse. There is now more rattling in his breathing than there was at the last report.

June 5th, 7 o'clock, A. M. My patient has ejected repeatedly, by coughing and gagging, large quantities of mucus since yesterday; and was put in the warm bath last night. He appears to be considerably emaciated; his breathing is attended with both rattling and wheezing: there is a coolness about the thorax, but the rest of the body is hot. Each dose of the calomel is increased to one grain and a half, which, together with the squills, is to be given every half hour until four portions be taken, and then every two hours as before directed.

Three o'clock, P. M. In addition to the other symptoms, after a fit of coughing and vomiting, the child's feet, arms and lips were observed to turn of a livid hue, which colour now appears on one foot, but in the rest has disappeared; his stools are slimy and of a dark green colour, and he is comatose. This was the most alarming day of his sickness; the relatives and neighbours came in, as one expressed it, "to see the last of him."

June 6th, 8 o'clock, A. M. The breathing is more rattling when the child is asleep than when awake. His skin is not so hot; he does not vomit so frequently; the discharges are less thick and slimy, and have a milky white colour. The livid appearances are gone; the skin is moist, and the child appears somewhat better in every respect.

Eight o'clock, P. M. He has been somewhat lively during the day, but has had no sleep, and as correctly as the parents can judge, has been without fever. The fluids, which have been ejected three or four times since this morning, continue slimy and white. At present he has some fever, his breathing is wheezing, and his cough has a harsh sound. A white miliary eruption, forming small eminences hard and rough to the touch, has appeared over his face and body. The medicines to be repeated every five or six hours.

June 7th, 6 o'clock A. M. Perspiration appears to flow freely this morning, and the child is free from fever; he was very hot and restless during the latter part of the night.

I took the infant in my arms, placed his breast on the palm of one hand, with his face down towards the floor of the house, and the rattling and wheezing became immediately louder; coughs less frequently; has vomited seven or eight times the last twenty-four hours; after vomiting the respiration is more free for a while, and as the medicines generally excite a cough and retching soon after their exhibition, I ordered them to be given at those times when breathing should begin to become impeded; the eruptions still appear, but are less numerous than they were last evening; bowels continue open, stools slimy and of black and green colours intermixed; ordered a small dose of jalap and calomel. The child is certainly better; his countenance is not so pallid as heretofore, but has wasted very considerably in fat and flesh, and is not able to stand on his feet; though somewhat restless, yet he shows a strong inclination for play.

Eight o'clock, P. M. Has been very fretful and peevish during most part of the day; his stools continue of the same colour and consistence; at present is asleep, perspires freely, and breathes much easier.

June 8th, 9 o'clock, A. M. My patient rested well last night, and is now playful; has not vomited since the last report; has a rattling in the trachea in respiration; his tongue is cleaner, and countenance is coming to its natural colour; physic of yesterday did not operate freely; ordered a dose of calomel and rhubarb.

June 9th, 9 o'clock, A. M. Has vomited only three times the last twenty-four hours; at night ejected from the trachea more fluid at one time than he has done at any other throughout his sickness; that discharge is of a very gelatinous consistence and yellow colour; his breathing is still attended with a rattling noise; the paroxysms of coughing are of longer duration than usual, and performed by stronger exertions; in all other respects the child appears perfectly well: the calomel and squills to be repeated occasionally whenever respiration shall become impeded.

June 10th. He continues to recruit in health. The calomel is omitted.

June 11th. Has had but one discharge from the trachea since yesterday; the miliary eruptions, which did in part disappear, again accumulate and are accompanied with inflamed skin.

June 13th. An erysipelatous inflammation has appeared in different parts of the body, accompanied with some degree of swelling; cough and vomiting occur less frequently than before; the wheezing is most evident during sleep, when awake it is scarcely perceptible, and is produced by the expulsion of air from the lungs, the inspirations being perfectly free from sound.

June 15th. His breathing is free during the day, except now and then it is attended with the above-mentioned sound in a low degree; he coughs occasionally, but the cough is not accompanied as before with vomiting.

June 17th. His breathing is perfectly natural except at night, and then the wheezing is loudest when the child's head lies low; upon elevating the head that noise is scarcely perceptible. My patient requires no more attendance.

Remarks on the foregoing Case.

At the commencement of this patient's complaint, the weather was rainy and cool, but the atmosphere soon after became dry, and continued so during the remainder of his sickness. Reports are made on the form and appearances of the disease, long after the child was out of danger, for the purpose of showing the gradual decline of symptoms.

In the beginning of my attendance on this patient, a resolution was formed to give a fair and impartial trial to calomel and squills combined. The proper steps were taken, the auxiliary means of cure were omitted, and all the remedies and methods recommended by the relations of the sick and by the neighbouring officious women, were either denied a trial or condemned as pernicious. During my absence, however, the parents, in consequence of some powerful arguments urged in their behalf, gave the child some syrup of onions, and at another time some sweet-oil and sugar. These things were administered on the authority of two females, who declared that they had known them to cure other children. The reader will, no doubt, form a different opinion of their virtue and efficacy, and view them as innocent articles which can do no harm; but admitting that they might be of benefit by proper management, they were not in the foregoing case pursued to such extent as to have any possible agency in the cure of the disease.

The child took during the space of seven days after I first saw him, fifty-five grains of calomel, which quantity

did not affect the mouth. As my present intention is the relation of facts, I do not offer any theory concerning the mode of operation of calomel and squills; medicines which, if duly managed in croup, will gain the confidence and applause of practitioners of physic. Calomel should be given in doses of one grain, one and an half, or two grains, according to circumstances, in the beginning frequently, until several doses be taken. My usual practice is, together with other means of cure, to give a portion every half hour for the first three, four, or five hours, if there be symptoms of danger, and afterwards every two hours, except there be an alteration in the discharges from the trachea, or an abatement of urgent symptoms.

I shall conclude by urging the following reasons for administering calomel in large and frequent doses. 1st. There is a part of the powder which adheres to the papers in which it is folded. 2d. There is commonly some lost in the act of throwing it out of the papers, when preparing for exhibition. 3d. Most children do not swallow all the medicine that is put into their mouths, for a part is apt to be forced out with their saliva. 4th. If vomiting commence soon after the exhibition of calomel, a part may be discharged in that way, and consequently prevented from operating upon the system. 5th. It appears from the above case and others, that calomel may be given with safety to greater extent in croup, than in many other diseases. All these reasons prove the propriety of administering calomel in large and repeated doses, and of using that article of the materia medica with a considerable degree of freedom. The portions should be large, because part will almost inevitably be lost before it reaches the stomach; and the more aptly vomiting is produced, so much the more frequently should they be repeated; for it is a desideratum in the treatment of croup, that medicines have a quick effect on the body, to arrest the progress of that fatal disease. But with respect to this as to other medicines, the same caution is absolutely necessary, viz. that while they be administered with boldness and perseverance, their operations should always be carefully watched with due degree of circumspection.

A Case *of* Tetanus, *communicated to Dr.* Miller *by* Richard Hazeltine, *M. D. of Berwick, in Maine.*

FRIDAY the 27th of December, 1805, a female child of J—— R——, *aged six years*, complained in the morning of soreness of the throat, and some difficulty of swallowing. She betrayed no other symptom of indisposition through the day, excepting an unusual inactivity and dulness in her play with the other children. Saturday morning she was more seriously affected; complaining of stiffness in the back of her neck, with immobility of the jaw, &c. which affections increased through the day. In the evening I was called to her; and found her pulse small, frequent and quick, with thirst, costiveness, violent tension and frequent contractions of the muscles and tendons in the back and neck, and almost complete immobility of the jaw: in fact, all the circumstances exhibited a genuine case of that variety of Tetanus commonly called Opisthotonos, together with Trismus. The parents and family could ascribe these unusual appearances to no particular cause; and upon strict inquiry, I could not find that she had at any time past, sustained any injury whatever. Suspecting that these diseased appearances might proceed in some measure, and perhaps wholly, from worms; I gave her a dose of calomel immediately, and put her on the use of a strong infusion of the Spigelia; together with a grain of crude opium in powder, every two hours, or oftener, till the spasms should go off. At this time her mental faculties were not in the least impaired; nor had her appetite for food failed. Sunday, P. M. I found her in every respect worse: the spasms were violent and almost constant, bending her backward like the segment of a circle. The spigelia tea had been freely taken, and was succeeded by one or two dejections; but unaccompanied with worms. The opium had not been given according to my directions, not through fear with respect to its effects, but through the ignorance of the family with respect to the value of the medicine in such cases: enough had been given, however, to produce frequent and long naps of sleep, which seemed sometimes to be easy and salutary; but for the most part, quite otherwise. During her sleep, the jaws would, occasionally, be firmly fixed, and then relaxed; and her lips were frequently in motion, somewhat similar to those of sucking infants when asleep. A general relaxation

of the spasms occasionally took place for short spaces of time while she slept; for while she lay on her back asleep, her head might be sometimes raised, with a hand put underneath, without any resistance from the muscles, &c. She appeared to be in great distress most of the time, and when awake, delirious; her countenance looking wild, alternately red and pale, and deadly; and frequently covered with a profuse, cold sweat. Several *enemata* had been injected to-day, which had excited very free evacuations; but brought away no worms. I urged the necessity of giving the opium, and tarried and exhibited two or three doses, of two grains each, myself, in the course of as many hours. The opium evidently produced stupor, confused sleep, delirium, &c. but no permanent remission of the spasms. Does not opium sometimes, in these cases, accelerate the fatal event? No other medicines were resorted to in this case, for on my first visit I confided in a faithful exhibition of the opium; and on my second, the case so clearly appeared beyond the reach of art, that it was not deemed expedient to make trial of any thing further. I left her at about 5 o'clock, P. M. and at 9 in the evening she died. I cannot say exactly how much opium she took in the 23 or 24 hours after I first saw her; but from certain circumstances, am pretty confident she did not take less than between 20 and 25 grains.

P. S. Within two years, I have successfully treated two cases of incipient tetanic affection, in plethoric habits, by opium, after liberal evacuations by bleeding and purging. One was that of a female in the seventh month of pregnancy: the disease probably came on in consequence of a lacerated wound which she received on one of her great toes, a few days previous to her illness.

On the internal use of the Acetate of Lead.

BY THE SAME.

IF any further testimony than what is to be found in certain of our late medical publications,* in favor of the internal use of the acetate of lead, could be deemed necessary; I can affirm, that Dr. Philip Carigain, of Concord,

* The Philadelphia Med. and Phys. Journal and Medical Mus. and the New-York Medical Repository.

N. H. who was a most extensive and successful practitioner, and with whom I studied medicine more than sixteen years ago, was then in the *constant use* of a powder, for menorrhagy, of which the acetate of lead constituted a considerable part. He did not always compound his medicines by weight and measure; but his astringent powder for uterine hemorrhage, was composed of Flor. Balaust. Cort. Cinnam. Fol. Ros. Rub. Alum. com. and Ceruss. acetata: the latter article made up, perhaps, about half a drachm in the ounce of the powder. He repeatedly told me that he considered the three first articles as principally necessary and useful in giving an agreeable taste and colour to the powder. His dose was about a common tea-spoonful, [3 1] *pro re nata.* It always gave relief; bloodletting, in *some cases*, being previously performed.

ACCOUNT *of a* VOLCANIC ERUPTION *at* ST. GEORGE'S, *one of the Western Islands, communicated in a letter from* J. B. DABNEY, *Esq. American Consul, to a friend at St. Michael's. (The Editors have examined specimens of the carbone, lava, and pumice formed during this awful occurrence.)*

Fayal, Azores, June 25, 1808.

A PHENOMENON has occurred here, not unusual in former ages, but of which there has been no example of late years. It was well calculated to inspire terror, and has been attended with the destruction of lives and property. On Sunday the first of May, at one o'clock, P. M. walking in the balcony of my house at St. Antonio, I heard noises like the report of heavy cannon at a distance, and concluded there was some sea engagement in the vicinity of the island. But soon after, casting my eyes towards the island of St. George, ten leagues distant, I perceived a dense column of smoke rising to an immense height; it was soon judged that a volcano had burst out, about the centre of the island, and this was rendered certain, for when night came on, the fire exhibited an awful appearance. Being desirous of viewing this wonderful exertion of nature, I embarked on the third day of May, accompanied by the British consul, and ten other gentlemen, for St. George; we ran over in five hours, and arrived at Vellas,

the principal town, at 11 o'clock, A. M. We found the poor inhabitants perfectly panic struck, and wholly given up to religious ceremonies and devotion. We learned that the fire of the first of May had broken out in a ditch, in the midst of fertile pastures, three leagues south-east of Vellas, and had immediately formed a crater, in size about twenty-four acres. In two days, it had thrown out cinders, or small pumice stones, that a strong N. E. wind had propelled southerly; and which, independent of the mass accumulated round the crater, had covered the earth from one foot to four feet in depth, half a league in width, and three in length; then passing the channel five leagues, had done some injury to the east point of Pico. The fire of this large crater had nearly subsided, but in the evening preceding our arrival, another small crater had opened, one league north of the large one, and only two leagues from Vellas. After taking some refreshment, we visited the second crater, the sulphurous smoke of which, driven southerly, rendered it impracticable to attempt to approach the large one. When we came within a mile of the crater, we found the earth rent in every direction; and as we approached nearer, some of the chasms were six feet wide. By leaping over some of these chasms, and making windings to avoid the large ones, we at length arrived within two hundred yards of the spot; and saw it in the middle of a pasture distinctly at intervals, when the thick smoke which swept the earth lighted up a little. The mouth of it was only about fifty yards in circumference; the fire seemed struggling for vent; the force with which a pale blue flame issued forth, resembled a powerful steam engine, multiplied an hundred fold; the noise was deafening; the earth where we stood had a tremulous motion; the whole island seemed convulsed: horrid blowings were occasionally heard from the bowels of the earth, and earthquakes were frequent. After remaining here about ten minutes, we returned to town; the inhabitants had mostly quitted their houses, and remained in the open air, or under tents. We passed the night at Vellas, and the next morning went by water to Ursulina, a small sea-port town two leagues south of Vellas, and viewed that part of the country covered with the cinders before mentioned, and which has turned the most valuable vineyards in the island into a frightful desert. On the same day, the 4th of May, we ventured to Fayal, and on the 5th, and succeeding days, from twelve to fifteen

volcanoes broke out in the fields we had traversed on the 3d, from the chasms before described, and threw out a quantity of lava which travelled on slowly towards Vellas. The fire of those small craters subsided and the lava ceased running about the 11th of May; on which day, the large volcano that had lain dormant for nine days, burst forth again like a roaring lion, with horrid belchings, distinctly heard at twelve leagues distance, throwing up immense quantities of lava, illuminating at night the whole island. This continued with tremendous force until the 5th of June, exhibiting the awful, yet magnificent spectacle of a perfect river of fire, distinctly seen from Fayal, running into the sea. On that day, the 5th, we experienced that its force began to fail; and in a few days after it ceased entirely. The distance of the crater from the sea is about four miles, and its elevation about three thousand five hundred feet. The lava inundated and swept away the town of Ursulina, and country houses and cottages adjacent, as well as the farm-houses throughout its course. It, as usual, gave timely notice of its approach, and most of the inhabitants fled; some few, however, remaining in the vicinity of it too long, endeavouring to save their furniture and effects, were scalded by flashes of the steam, which, without injuring their clothes, took off not only their skin, but their flesh. About sixty persons were thus miserably scalded, some of whom died on the spot, or in a few days after. Numbers of cattle shared the same fate. The judge and principal inhabitants left the island very early. The consternation and anxiety were some days so great among the people, that even their domestic concerns were abandoned; and amidst plenty, they were in danger of starving. Supplies of ready baked bread were sent from hence to their relief, and large boats were sent to bring away the inhabitants who had just lost their dwellings. In short the island, heretofore rich in cattle, corn and wine, is nearly ruined, and a scene of greater desolation and distress has seldom been witnessed in any country.

REVIEW.

The Geographical, Natural and Civil History of Chili. By Abbe Don J. Ignatius Molina: *with notes from the Spanish and French versions, and an appendix containing copious extracts from the Araucana of* Don Alonzo de Ercilla. *Translated from the original Italian by an American gentleman. Middletown.* Riley. 2 *vols.* 8*vo.* 1808. (*With a map.*)

MOLINA, the writer of the work before us, belonged to the order of Jesuits. He was a native of Chili, and resided there until the dissolution of that fraternity, and their expulsion from the Spanish dominions. On that occasion he retreated to Bologna, in Italy; but was unfortunate enough to be deprived both of his collections in natural history, and of his manuscripts. Having, however, regained his papers some time after his residence in Italy, he applied himself to writing the history of his own country. This was published at two several times. The first part, comprising the natural history, made its appearance in 1787, and the second, including the civil history, not until some years after. Both are contained in the present publication.

The translator has modestly concealed his own name. If, however, as rumour has suggested, it is the acute and enterprising Mr. William Shalor, we rejoice that he has so well improved the intervals of his severer employments, when he visited that part of the world: or if, as more recent information leads us to believe, Mr. R. Alsop has superadded the revisal of his taste and genius, the work appears before the public under a still higher and stronger recommendation.

The section of South America called Chili, is well known to geographers to lie between the South Sea and the Andes, in the space betwixt the 24th and 45th degrees of south latitude. It is, in its greatest extent, about 1260 geographical miles in length, and upwards of 200 in breadth, making a surface of 378,000 square miles. This vast territory is divided into thirteen provinces; each of which has its interior organization of government, its mountains, rivers, its capital and its harbours.

Chili has furnished North America, and the other parts

of the world, with two important esculent plants; the round potatoe and a fine species of strawberry. Molina, on the authority of Bomare, considers the solanum tuberosum, or common potatoe, as indigenous in Chili: and he describes the strawberry of Chili as differing from the European in its leaves, which are rough and succulent, and in the size of its fruit, which is frequently that of a hen's egg. The Chili strawberry which he had seen after transplanting to Europe, had degenerated exceedingly; its fruit was small, and little of its fragrance was left, which causes it to be so highly esteemed in its native region.

The first volume, containing the natural history, is divided into four principal chapters. Of these, the first treats of the situation, climate, meteorology, earthquakes and volcanoes. The second contains an account of the waters, soils, earths, stones, salts, bitumens and metals. Vegetable productions, with an enumeration of herbs, shrubs and trees, and of their parts, as useful in food, medicine and the arts, are treated of in the third. And zoology, or a description of worms, insects, reptiles, fishes, birds and quadrupeds, occupies the fourth.

Subjoined to these chapters, is a systematic table of all the animal, vegetable and mineral species, mentioned in the work; and corresponding with the Systema Naturæ of Linnœus. And in addition to these, the reader will find a body of supplementary notes, illustrating the history of this celebrated country, extracted from an anonymous work published at Bologna in 1776. The writer of this appears to have been well acquainted with his subject. The names of the provinces are, 1st, Copiapo. 2d, Coquimbo. 3d, Quillota. 4th, Aconcagua. 5th, Melipilla. 6th, Saintiago. 7th, Rancagua. 8th, Calchagua. 9th, Maule. 10th, Itata. 11th, Chillan. 12th, Puchacay. 13th, Huilquilemu. To which is to be added Valdivia, a settlement in the midst of the country, possessed by the aboriginal Araucanians; the archipelago of Chiloe with its forty-seven islands; the islands of Juan Fernandez and Massafuera, and the appendant government of Cujo, which lies to the eastward of the Cordillieras, and between whose capitals, Mandaza and Buenos Ayres, there is a considerable trade in wine and fruits.

The author appears to have laboured under the inconvenience of a defective education. For he does not seem to have been regularly instructed in natural history. Had he been better acquainted with geology, mineralogy, botany

and zoology, his work would have been greatly more instructive than it now is. Considering, however, that he was an ecclesiastic, and that these studies were extra-professional, the abbe Molina may be justly considered as one of the most industrious and meritorious of the sacerdotal order.

He considers Chili as one of the best countries in America. Corn, wine and oil abound there, as in their native soils. The fertility of the soil and benignity of the climate, are wonderfully adapted to European productions. All the European fruits grow to perfection there. Animals imported thence, not only thrive but improve in this delightful region. Horned cattle and horses exceed any thing that Old Spain can produce. Copper, lead, silver and gold, are afforded plentifully by the mines. And the atmosphere and seasons are very favourable to health and long life. Tropical fruits also grow to perfection in some of the provinces of Chili. But the presence of fourteen volcanoes is apt to strike the mind with dread; and three or four earthquakes a year, though matters of inconsiderable moment to a Chilian, excite rather uneasy emotions in an inhabitant of the United Sates. The Araucanian name for the ambergris thrown up on the coast is the "excrement of whales;" a fact which our whalemen have verified. A mingled ore of copper and zinc abounds there, which, on being melted, furnishes a real native brass. Several mountains of fossil salt are found in Copiapo and Coquimbo. The meadows afford twelve different species of trefoil, or clover—and a kind of wild basil or *ocymum* grows in St. Jago, that every morning is covered with hard and shining crystals of common salt, which is collected and employed by the country people for culinary purposes. Its taste is greatly preferable to ordinary sea-salt, and a single plant produces daily about half an ounce of it.

We extract a specimen of the work for the gratification of our readers. And we cannot select a more favourable passage than that which describes the several sorts of ores, and the various modes of separating the metals.

"*Semi-metals.*—All the known kinds of semi-metals are met with in Chili, and are found either in mines by themselves, or combined with metallic ores, and generally in a state of mineralization. But the working them is neglected or prohibited, and antimony is the only one sought for, as it is necessary for refining the precious metals. This

mineral is discovered under various forms, as, the red antimony combined with arsenic and sulphur, the striated and the compact, all of which are found in mines of gold, silver, iron and lead. One mine alone has furnished crystallized antimony.

"The digging of quicksilver is rigorously prohibited in consequence of its being a royal monopoly. It is found in a metallic form, or mineralized with sulphur under that of cinnabar. The two richest mines are in the provinces of Coquimbo and Copiapo, from whence vast quantities might be obtained if it were permitted to work them, the greater part of which would probably be sold in the country itself, as much is required for the amalgamation of the precious metals. The mine of Coquimbo is in one of the midland mountains. The bed or matrix of the quicksilver is a species of brownish clay, or a very brittle black stone; in this the quicksilver is found in great abundance in its natural state, in horizontal veins, occasionally intersected by mineralized mercury or cinnabar. That of Quillota is situated in a very high mountain near Limache, and appears to be as rich as the former. The quicksilver is mineralized with sulphur; its matrix is a calcareous stone, which would serve very well, as an intermediate substance, to retain the sulphur, if the mercury were to be separated from it by a chemical process.

"*Metals.*—The Chilians set little value upon lead mines, although they possess those that are of an excellent quality. No more of this metal is dug than what is wanted in the foundries for the melting of silver, or is employed for domestic purposes. Lead is not only found in all the silver mines, but, in cubes of various sizes with the galena or black lead, in mines of pure ore, or intermixed with spar of different colours. All the lead mines contain either gold or silver, but in too small a quantity to excite the attention of the miners. The mines of tin, although excellent, are equally neglected with those of lead. This ore is usually found in sandy mountains, not like other metals in continued veins, but under the appearance of black stones, very brittle and heavy, of an unequal size and irregular shape. In this state, the tin contains a small portion of iron, mineralized with a little arsenic. Crystals of tin, of various colours, are also common throughout Chili.

"M. de Pauw, with a dash of his pen, has driven out of this country all its iron mines, since he boldly asserts

that "Chili does not contain a single mine of iron." But Frazier, and other writers who have been in that country, declare the contrary.

"So plentiful is this metal in the country, that as I have already observed, the brooks and rivers deposit great quantities of sand, replete with particles of iron upon their shores, the sea also washes it up at times in great abundance.

"The provinces of Coquimbo, Copiapo, Aconcagua and Huilquilemu, are very rich in mines of iron; it is found under various appearances, as a black, a grey compact ore, or crystallized in blueish cubes. From the essays that have been made, the iron of these mines is of the very best quality; but the working of it is prohibited, in order to favour the trade of Spain, from whence all the iron used in the country is brought. But during the last war between England and Spain, when iron was at an exorbitant price, several quintals were secretly wrought which proved to be of a superior quality. The Araucanian provinces likewise produce excellent iron, and I have been assured by an intelligent Biscayan smith, that it was no way inferior to the best in Spain. In the same country has likewise been discovered a species of that mineral substance called *refractarias;* and there is scarce a province that does not contain a mine of load-stone: Frazier speaks of a mountain in the Andes, called St. Agnes, which is entirely composed of this substance.

"If the Chilians have neglected the working of mines in general, this cannot be said of those of gold, silver and copper, to which the greatest attention has been paid, from the conquest to the present time. The richest mines of the latter are found betwixt the 24th and 36th degrees of latitude; the ore obtained from them is of various qualities, some very fine and some but indifferent. Ulloa, in speaking of this copper generally, assigns to it the second place after that of Corinth, which is properly considered as an artificial metal. Almost all the copper in Chili contains a greater or less proportion of gold. This was well known to the French, who, in the beginning of the present century, carried on a profitable commerce with that country for copper, great quantities of which they exported and extracted the gold from it. The proportions of these metals are very various; there are some copper ores which contain a tenth, and others a third part of gold; but in these cases

both substances are found in a metallic state, without having been mineralized.

"The copper ores, containing but little or no gold, are usually mineralized with arsenic or sulphur, sometimes with both, and mixed with iron and silver. They are found under the forms of vitreous and hepatic ore, of ultramarine stone, and of malachite and white copper ore. These several ores are rich in metal, but, from the expense of refining them, they are considered as of no value. The ores that are wrought are but of two kinds, the grey or bell metal, and the malleable copper. The grey ore, or bell metal, is usually mineralized with arsenic and sulphur; it contains no gold or other metal, except a small portion of tin. From this mixture and its grey colour, which it retains even after having been melted and refined, it may be considered as a species of native bronze; it has another characteristic of that factitious metal in its brittleness, although its specific gravity is much greater than that of the metals composing it, when artificially combined. This brittleness renders it unfit for any thing but the casting of cannon, bells, &c.

"Large quantities of this metal are sent to Spain for the use of foundries, whence M. Bomare has been led to observe, in his Dictionary of Natural History, that the copper of Coquimbo is of little value. The matrix of this ore is a grey sandy stone, easily broken; and the relative proportions of the copper to the tin vary considerably.

"The malleable copper is found in many of the other provinces as well as Coquimbo; it possesses every quality requisite in that metal, and is the species from whence the Chilian copper has principally derived its high reputation. Its matrix is a soft brown and sometimes white stone; the ore, which is mineralized with a small portion of sulphur, in its appearance and ductility resembles native copper, a simple roasting being sufficient to expel the sulphur and render it malleable and fit for use. The miners, however, refine it in the usual manner, as they pretend that by this means it acquires a brighter colour. There is a remarkable affinity between this copper and gold; those metals are not only always found combined, but veins of pure gold are frequently met with in the deepest copper mines. In this circumstance has originated the error of many miners, who assert that copper, when it extends to a certain depth, becomes transmuted into gold. The veins do not always

preserve the same course, and are frequently divided into small ramifications; and there is a still greater diversity in their *gangues* or matrices. A great number of mines have been opened, but those only are worked whose ore is so rich as to yield at least one half its weight in refined copper; those of a less product having been relinquished as too expensive; notwithstanding which, between the cities of Coquimbo and Copiapo there are now in work more than a thousand mines, besides those in the province of Aconcagua.

"The most celebrated copper mine in Chili was the old mine of Payen, but the working of it has been for many years relinquished, in consequence of the opposition of the Puelches, who inhabit that district. On its first discovery, this mine furnished *pepitas*, or pieces of pure copper, from fifty to a hundred weight, which the writers of those times represent as of a beautiful colour resembling pinchbeck, and containing in general more than an equal portion of gold. This metal was so pure and easily separated from its matrix that it required only a common fire to melt it.

"A mine has lately been discovered at Curico which is as rich as that of Payen. The ore consists of gold and copper in equal proportions, and the inhabitants have named it *natural avanturine*, from its being filled with brilliant particles that give it a beautiful appearance. This metal is used by the goldsmiths for rings, bracelets, and other ornaments of jewelry.

"In the province of Huilquilemu are hills that furnish a copper ore combined with zinc, or a real native brass. It is found in pieces of various sizes, and the matrix is a brittle earthy stone of a yellow colour, or a dull green. This substance, which has hitherto been obtained only by artificial means, probably owes its formation to subterraneous fires, which sublimating the zinc, and combining it with the copper, has produced this extraordinary natural mixture. It is of a fine yellow colour, and as malleable as the best artificial brass, and is called Laxa copper, from the river of that name in the vicinity of the mine.

"The method of smelting the ore is very simple: After separating it from the earth and superfluous matrix, it is broken into small pieces with wooden pestles. These pieces are placed between layers of wood, which are set on fire, and the heat kept up with a large bellows moved by water. The furnace is constructed of an adhesive clay;

but the bottom, which is slightly inclined towards the centre, is formed of a cement of plaister and calcined bones. The vault contains a sufficient number of outlets for the smoke, and at the top is an aperture that may be closed or opened at pleasure, which serves for the introduction of ore and fuel.

"At the bottom of the furnace is a hole for the passage of the liquefied metal, which is conveyed into a receptacle, and from thence taken and refined in the European manner.

"I do not know what quantity of copper is annually obtained from the mines, but from the exportation it must be very considerable. Five or six ships sail every year for Spain, each of which usually carries twenty thousand quintals or upwards. Much is also sent to Buenos-Ayres by land; and the Peruvians, who have an extensive commerce with the coast, export at least thirty thousand quintals yearly, which is principally employed in their sugar works. Besides which the quantity made use of in the cannon foundries, and for domestic purposes, is by no means inconsiderable.

"The mines of copper are not confined to any particular district, but scattered throughout the country; those of silver, on the contrary, are found only in the highest and coldest parts of the Andes. This situation, so unfavourable for working them, and the vast expense of refining, has caused a great number of mines, though rich in ore, to be abandoned, and there are but three or four that are at present worked. But it may be presumed, when the population of this country becomes increased and its industry excited, that these mines, now neglected, will become an object of attention, and that the enterprise of a future generation will conquer those obstructions which impede the labours of the present.

"All the provinces bordering upon the Andes produce some silver mines, but the richest are in those of St. Jago, Aconcagua, Coquimbo and Copiapo. In these it is found not only in a metallic form, but under the appearance of vitreous ore, hornblend, and red, grey and white ore, wherein the silver is mineralized with sulphur and arsenic, and it is occasionally found combined with other metals. In the year 1767, a piece of silver ore was found in the neighbourhood of Copiapo; it was of a green colour, and, on being assayed, was found to contain three-fourths of pure

silver. It was mineralized with a small quantity of sulphur, and much search has since been ineffectually made by the inhabitants to discover the vein from which it was detached.

"The ore held in the highest estimation by the miners is the black, so called from its matrix being of a dark colour. Those of them who are experienced are scarcely ever deceived in this ore, and whenever they strike upon a new vein can nearly determine by the eye the quantity of silver which it will yield. This ore presents three very distinct varieties, though differing but little in appearance. The first, called *negrillo*, resembles the scoria of iron, and affords no apparent indication of silver. The second, the *rossiclaro*, which is distinct from the red silver ore, yields a red powder when filed; it is very rich although its external appearance is not promising. The third, the *piombo ronca*, is the richest of all; as it is mineralized with a very small quantity of sulphur, it is much more easily separated than the others, which require a more laborious and complicated operation.

"These three varieties of ore are obtained from the mine of Uspallata, the largest and richest of any of the silver mines in Chili. It is situated upon the eastern mountains of that portion of the Andes which forms a part of the province of Aconcagua. On the top of these mountains is a large plain called Uspallata, of more than seventeen leagues in length and three in breadth: it is watered by a pleasant river and covered with delightful groves, the air is healthy and temperate, and the soil fertile. This plain serves as a base to another more elevated, called *Paramillo*, upon which the Andes of the first rank rise to such a height as to be seen distinctly at St. Louis de la Punta, a distance of one hundred and twenty leagues. The ridge of these immense mountains is a blackish clay stone, containing a great number of round stones similar to those of rivers. This phenomenon appears to me unexplainable in any other way but on the principle of a general deluge; though some authors have, ridiculously enough, accounted for it, by supposing that the ancient Indians amused themselves in throwing these stones upon this mass, while it was yet soft and in a state of clay. But besides the irrationality of such a conjecture, the Abbe Morales of Cujo, an intelligent naturalist, who carefully examined these mountains, affirms that the interior of this mass is no less filled with these

stones than the exterior, which of itself affords a sufficient proof to the contrary.

"The mine of Uspallata extends along the base of the eastern mountains of the plain of the same name, from the thirty-third degree of latitude, in a direct northerly course; but the termination of it is unknown, for I have been assured, by persons who have followed it for thirty leagues, that it continues to be equally abundant at that distance, and there are those who assert that it is a ramification of the celebrated mine of Potosi.

"The principal vein is nine feet in breadth, but it branches out upon both sides into several that are smaller, which extend to the neighbouring mountains, and are said to exceed thirty miles in length. The matrix of the great vein is a various coloured earth, which separates it into five parallel divisions or layers, of different thicknesses. The middle layer is but two inches thick; the ore, which is called by the miners the *guida*, is black, but so filled with metallic particles as to have a whitish appearance; the two next strata are brown and are called *pinterias*, the two exterior ones are of a dark grey and known by the name of *brozas*. Although the general direction of this vein is horizontal, it sometimes runs perpendicularly, and is found to increase in richness in proportion to its depth. From assays which have been made at Lima, on the ore of Uspallata, it appears that the *guida* yields more than two hundred marks of silver the *caxon;* the *pintarias*, mixed with the *guida*, fifty; and the *brozas* fourteen; a produce not inferior to that of the mine of Potosi. The mine of Uspallata was discovered in the year 1638, but although on its first discovery it furnished the strongest indication of its wealth, from want of labourers, or some other cause, it was neglected until 1763, but since that period has been constantly wrought with immense profit.

"Before the arrival of the Europeans, the Indians employed a very simple method to separate the silver from the ore, especially when the metal was in a metallic form, and not mineralized or combined with other substances. This method consisted in merely exposing the ore to a degree of heat capable of melting the metal which it contained.—When the ore was united with other substances, or mineralized, and of course more difficult to be melted, they made use of a kind of open furnace, constructed upon elevated ground, in order that the fire should be kept up by a

constant current of air. This appears to have been adopted with a view to save labour, as they were not unacquainted with the use of the bellows, which was known to them under the name of *pimahue;* and even at present this mode is preferred by the poorer class, who practise it, and no small part of the silver, employed as a circulating medium in Chili, is obtained from these clandestine foundries.

"The process generally pursued, particularly by the wealthy proprietors, is that of amalgamation. In this case they begin with reducing the ore to powder by grinding it in a mill. This powder is then passed through a wire sieve and spread upon the hides of cattle, where it is mixed with sea salt, quicksilver and rotten dung. After wetting this mixture from time to time, and beating and treading it well for the space of eight days, in order to incorporate the silver and the mercury, it is put into a stone trough with water sufficient to dilute it. In this situation, the silver amalgamated with the mercury, from its weight sinks to the bottom, while the lighter heterogeneous particles are drawn off with the water through a hole in the trough into a vessel placed to receive it. This amalgam, after having been repeatedly washed to cleanse it from all foreign substances, is put into a linen bag, and the mercury, which has not become incorporated with the silver, expressed from it. In this state of paste the amalgam receives any shape, but it is usually formed with moulds into small cylindrical tubes. The last process is that of separating the mercury from the silver; this is done by means of evaporation, in a receiver which is filled with water and closely fitted with a head. The small quantity of lead or other metal that may remain after this process, can only be detached by melting it.

"Gold, of all the metals, is that which is most abundant in Chili, and it may be said that there is not a mountain or hill but contains it in a greater or less degree; it is found also in the sands of the plains, but more especially in those washed down by the brooks and rivers. Several French and English authors affirm that the gold of Chili is the purest and most valuable of any; and it is true that its general standard is from twenty-two to twenty-three and a half carats. In the southern provinces, between the river Bio-bio and the Archipelago of Chiloe, several very rich mines of gold were formerly discovered which yielded immense sums; but since the expulsion of the Spaniards

from those provinces by the Araucanians, these mines have been in the possession of that warlike people, who have prohibited the opening them anew by any one under pain of death.

" The most important mines that are at present wrought are those of Copiapo, Guase, Coquimbo, Petorca, Ligua, Tiltil, Putaendo, Caen, Alhue, Chibato, and Huilli-patagua. All these, excepting the three last, which are of recent discovery, have been wrought ever since the conquest, and have constantly yielded a great product. But this is by no means the case with all the mines that are discovered: in many the miners are allured at first with appearances of great riches, but soon find the ore entirely fail, or in so small quantities as not to repay them for their labour. The metallurgists of Chili call this kind of wandering mine *bolson;* the same name is also applied to the ramifications, which in general are circular, and to the richest veins where the ore is found lodged in heaps and cavities. Another obstruction to working the mines are the inundations to which they are subject from subterraneous springs. These are frequent, and when they occur, compel the miners to abandon the mine, who seldom attempt to free it by drawing off or diverting the water. Some years since an accident of this kind occurred to the celebrated mine of Peldehues, in the neighbourhood of St. Jago. That mine, which produced daily upwards of fifteen hundred pounds weight of gold, was suddenly inundated, and the workmen were compelled to abandon it, after having in vain made every exertion to free it from the water.

" The matrix of the gold is very variable, and it may be said that there is no kind of stone or earth but what serves it for that purpose. It is to be seen every where, either in small grains or brilliant spangles, under singular forms, or in irregular masses that may be cut by the chissel. The most usual matrix is a very brittle red clay stone. The *salbanda*, or the exterior covering of the veins, called by miners *caxas*, is as variable as the matrix ; it is sometimes of spar or quartz, at others it consists chiefly of flint, marble or hornblend. The principal veins are frequently ramified into a number of smaller ones that are generally very rich. They sometimes descend almost vertically into the earth, and in those instances require great labour and expense to be pursued; at others they take a circular direction a few feet under ground and meet, particularly at the foot

of mountains. The usual course of the veins, though subject to some variations, is from south to north.

"The mines are worked both with the pickaxe and by explosion. The ore is reduced to powder in a mill of a very simple construction, called *trapiche*, of which two stones, the lower placed horizontally, and the upper vertically, form the mechanism. The horizontal is about six feet in diameter, and has near its circumference a groove of eighteen inches deep, in which the ore is placed; through the centre passes a vertical cylinder connected with a cog-wheel turned by water. The vertical stone is about four feet in diameter and ten or fifteen inches thick, and is furnished with a horizontal axis which permits it to turn freely within the groove. When the ore is sufficiently pulverized, a proportionate quantity of quicksilver is added to it, which is immediately amalgamated with the gold; to moisten the mass and incorporate it more fully, a small stream of water is then directed above it, which also serves to carry off the amalgam into reservoirs placed beneath the stone. The gold combined with the mercury falls to the bottom of these reservoirs in the form of whitish globules; the mercury is next evaporated by heat, and the gold appears in its true colour and in all its brilliancy. In each of these mills upwards of two thousand weight of ore is daily ground and amalgamated.

"As the digging of the stone ore obtained from the mines is very expensive, from the number of workmen and the materials required, it is pursued only by the rich; but it furnishes a much greater profit than the *lavadero*, or the ore procured by the washing of auriferous sands, which is practised only by the poorer class, and those who cannot afford the necessary expenses for mining. The washing is performed in the following manner: The earth or sand containing particles of gold is put into a vessel of wood or horn, called *poruna*, which is placed in a running stream and constantly shaken; by this means the sand which contains no metallic particles, being lighter, is thrown out over the top, and the more weighty, or the gold, remains at the bottom. This operation is necessary to be repeated several times, in order to carry off all the ferruginous earth which is always united with gold. But as many of the smaller metallic particles must necessarily be washed away with the earth by this process, a mode, in my opinion, much more economical, is that employed in some places of washing

the sand upon inclined planks covered with sheep skin. Defective as the process of washing is, the profit that accrues from it, is frequently almost incredible, as it is not unusual to find among the sand large pieces of gold, called *pepitas*, which sometimes exceed a pound in weight; but it is more commonly found in a pulverized state, and in the form of little round or lenticular grains. This gold is sold in the cities in little purses made of the scrotums of sheep, as in the time of Pliny, and is generally more esteemed than that of the mines, as it is of a better colour and a finer standard.

"The quantity of gold annually dug in Chili is difficult to be estimated. That called *oro-quintado*, which pays the fifth to the royal treasury, does not amount to less than four millions of dollars, of which there is coined at the mint of St. Jago a million and a half, the residue is exported in bullion, or used in the country for plate and jewelry. The amount smuggled without paying the duty cannot be calculated, but it certainly is very considerable. I have made much search, but without success, to discover the platina, or white gold, found in Peru. What bears the name of white gold in Chili, is a mixture of gold and silver in which the latter predominates. But since I left that country a new immalleable metal, of a kind unknown to the miners, has been discovered in the gold mine of Capati, on the mountains of Copiapo, which I imagine can be no other than platina.

"Many obstacles present themselves to impede the working of the mines, both in the danger to which the miners are exposed from the mephitic vapours, called mountain fires, and in the vast expense attending the digging them. The great number of tools, the timber required for propping the arches, which is very scarce and expensive in the country, the numerous workmen who must be paid and subsisted, together with the uncertainty of the product, are reasons which operate powerfully to discourage those who are inclined to engage in mining; of course, the number of those who pursue this business is very small in comparison to that of the mines.

"When any persons are desirous of opening a mine, application is made to the government, which readily grants its permission and appoints an inspector, under whose authority and direction they begin by dividing the mine into three equal parts, or *estacas*, each two hundred and forty-

six feet long and one hundred and twenty-three broad. The first portion belongs to the king, in whose name it is sold, the second to the owner of the land, and the third to the discoverer of the mine. As the opening of a mine is very injurious to the cultivation of the land in which it is situated, the proprietors of the soil endeavour to prevent as much as possible the discovery of veins in their grounds. The number of persons who flock from all quarters to a newly opened mine that promises to be profitable, is almost incredible. Some come thither to work, others to sell their provisions, which at such times are in great demand; and in this manner a kind of fair is gradually established, which leads to the erection of houses, and finally to the formation of a permanent town or village. A magistrate, with the title of the Alcayde of the mine, is then appointed by the government to regulate and superintend it, and as this office is almost always very lucrative, the governor of the province generally assumes it, and appoints a deputy to manage it for his account.

"The miners of Chili are in general well acquainted with metallurgy. They are expert in mining and in the art of assaying and refining metals; but their knowledge is wholly practical, and they are entirely ignorant of the theory or the real principles of the art. They are divided into three classes, the first those who labour in the mine, the second the founders and refiners, the third the porters or those who carry off the mineral. In general they are a bold, enterprising and prodigal class of men. Familiarized to the sight of the precious metals, they learn to disregard them, and attach but little value to money. They are extravagant in their expenses, and passionately addicted to gaming, in which they pass almost all their leisure moments; and instances are not unfrequent of a miner losing one or two thousand crowns of a night. Losses of this nature are considered by them as trifles, and on such occasions they gaily console themselves with a professional proverb, that "the mountains never keep accounts." Nothing is more abhorrent to them than frugality, and whenever they find one of their companions who has amassed a sum of money by his economy, they leave no means untried to strip him of it, observing, that avarice is a vice peculiarly degrading to the character of a miner; and so addicted are they to ebriety, that those who on first joining them are remarkable for their abstemiousness, are soon led, from

the influence of example, to participate in the general intemperance. From these causes none of them acquire property, and they generally die in the greatest poverty and distress, while the profits of their labour are wholly absorbed by those who supply them with provisions and liquor."

Having given this ample account of the first volume, we proceed to the second. This is occupied with the Civil History of Chili, and therefore lies without the limits of our plan as reviewers. We may, nevertheless, observe, that it is divided into four books, and the matter of these regularly distributed into chapters. The first of these treats of the civil events from the traditions of the aborigines in the unknown ages of past time, to its conquest by the Peruvians under the Inca Yupanqui in 1450, and finally to the founding of the city of Conception by the Spanish conqueror Valdivia in 1550. The second book contains an account of the Indians of Arauco, a brave and martial race, who defended their rights like heroic freemen, and gave the Castilians uncommon resistance and losses. Their manners and customs, rites and ceremonies, and their progress in astronomy, medicine, oratory and commerce, are described. The third and fourth books are chiefly filled with a recital of the wars carried on between these resolute Araucanians and the invading Spaniards; which conflicts were so obstinate and destructive, that the Europeans at length were glad to conclude a peace with them upon honourable and advantageous terms, in 1773.

A dissertation on the Chilian language, and a review of Ercilla's poem of Araucana, add very much to the literary value of this entertaining volume.

A comparative view of the four projected coastwise canals, which are supposed to be in competition for the trade between Norfolk and North-Carolina. By William Tatham. *Norfolk.* O'Connor. 1808. 8*vo. pp.* 27.

THE inland navigation from one part of the United States to another, is a subject of considerable importance. We have already given an enlarged account of that

subject in our review of Mr. Gallatin's report. The author of the tract before us, has presented his observations to the public since the Secretary of the Treasury laid his report before the Senate of the United States.

His object is to ascertain which is the preferable of the existing projects, for opening a communication by a canal, between the Sounds of North-Carolina and Chesapeake-bay, by the route of Norfolk. The first of these is that which passes through the Dismal Swamp. It extends twenty-two miles from Deep Creek, a stream of the southern branch of Elizabeth river, seven miles above Norfolk, to Joyce's creek, a branch of Pasquotank. The second is that which connects Nansemond river at Suffolk with Bennet's creek, a water of Chowan river at Gates court-house; passing by the western margin of the Dismal Swamp, and extending a computed distance of thirty miles. The third is the Great Bridge Canal, a distance of nine miles, between the Great Bridge and the North river. The fourth and favourite project of the author, is what he terms the Kempsville Canal. The design of this is to leave Elizabeth river near that place, and run from thence to North Landing, which is a distance of eight miles on a straight line. It is contemplated too, to connect with this a lateral canal to Lynhaven river, for the passage of armed craft and market boats for the defence and supply of Norfolk.

The particulars of this latter project have been detailed by Mr. T. in another pamphlet which appears to have been published about the same time, and at the same place. This is entitled *A View of the proposed grand junction canal designed to bring the commerce of North-Carolina to Norfolk by an inland navigation;* together with a proposed *lateral canal from Kempsville to Lynhaven river, &c.* And it is sufficient for our purpose to state, that he urges various considerations with great force and zeal in favour of the preference he has given.

Medical pocket-book; summarily comprizing a selection of the most useful medicines in modern practice, their proportions and doses, &c. *By* George Logan, *M. D. Charleston, (S. C.)* 8*vo.* 1808. Haff. *pp.* 81.

MEDICAL manuals have become so frequent that little novelty can be expected in them. If they are accurate, it is as much as the reader has a right to ask. The great outlines of these practical compendiums are very much alike. But a moderate proportion of time and talent is requisite to write one of these abridgments of materia medica and of pharmacopœia. The subjects of the present performance are arranged under three principal heads, and an appendix.

In the first, medicines are treated of, under eight classes. 1. LAXATIVES—Jalap, Glauber's salt, calomel, castor-oil, rhubarb, senna, cream of tartar, manna, sulphur, magnesia, aloes. 2. EMETICS—Tartar emetic, ipecacuanha, white-vitriol. 3. SUDORIFICS—James's powder, antimonial wine, Dover's powder, Seneka snake-root, camphor, Virginia snake-root. 4. DIURETICS—Foxglove, saltpetre, squill. 5. ANODYNES—Opium, laudanum, paregoric elixir, hops. 6. ANTISPASMODICS—Ether, ammoniac, asafœtida, musk, essence of mint, oil of anise-seed, fennel-seed. 7. TONICS—Peruvian bark, columbo root, elixir of vitriol, rust and tincture of steel, oak-bark, chamomile flowers. 8. ABSORBENTS—Magnesia, crabs-eyes, lime-water. Such is the materia medica of Dr. L. and such his classification.

His second part treats of compound medicines, as they are known by the denominations of 1. TINCTURES—Laudanum, paregoric elixir, tincture of rhubarb, of bark and gentian, of lavender, of antimony, of ipecacuanha, of poke-berries. 2. INJECTIONS—Laxative, emollient, astringent, anodyne, tonic, nourishing. 3. GARGLES—Emollient, astringent, detergent. 4. LOTIONS—of white-vitriol, lime-water, sugar of lead. 5. EMBROCATIONS—for rheumatic pains, for bruises. 6. CATAPLASMS or POULTICES—of mustard, for producing suppuration. 7. PLASTERS, CERATES, OINTMENTS—epispastic, basilicon, galenic, calamine, psoric, mercurial. This is a sketch of his compositions, or remedies formed by combination of simples.

Some surgical and miscellaneous medical remarks occupy the third part. Bloodletting, wounds, hœmorrhages, im-

posthumes, tumours, burns, scalds, dislocations, fractures, suspended animation from drowning, lightning and still-birth, bite of mad dogs, and stings and bites of venomous animals, together with directions for those who are going to sea, rules for the preservation of health, and advice to nurses, are all comprehended in the short compass of about sixteen pages. Brevity of this kind is the more remarkable on account of its infrequency.

Some concise observations on vaccination occupy an appendix of about two pages and an half. We were at a loss to imagine wherefore this compendium of pharmacy and prescription had made its appearance, until we read on the very last page, "Family medicines of the best quality furnished, and prescriptions cautiously prepared at a short notice, on application to Dr. G. Logan," &c.

Medical Papers, communicated to the Massachusetts Medical Society: to which is prefixed a list of their Officers. Published by the Society. No. 11, *Part* 1*st. Salem.* Cushing. 1806. 8*vo. pp.* 56.

THE respectable Association, which collected and arranged the papers included in this pamphlet, appears to consist of a number of physicians residing in different parts of the State of Massachusetts. How long the Association has existed, and whether it is formed merely by the mutual agreement of the members, or by a legal incorporation, is not expressly mentioned; but, we presume this body, from its extension throughout the State, is duly invested with corporate powers. The publication of these papers is made in numbers, at no certain periods, but probably according to the contingencies of collection. The first number has never yet come into our hands.

The first article of the number before us, consists of *A medical discourse on several narcotic vegetable substances*, by Joshua Fisher, M. D. vice-president of the society.

It is not the object of this discourse to deliver any regular or systematic account of any of these medicines; but to offer some miscellaneous and practical remarks on several of the most conspicuous among them, and occasionally to

introduce concise histories of cases of disease for the purpose of illustrating their uses.

Opium obtains the first notice. Dr. Fisher declines entering into the disquisitions concerning the mode in which this substance operates on the animal system; but judiciously remarks, that it is so much varied by relative circumstances, as frequently to produce not only different, but even opposite effects.

Dr. F. is the advocate of a free and bold use of this remedy. In spasmodic pains, he thinks a too sparing dose will often aggravate, instead of abating, the disease; and hence he contends, that the requisite dose should be given at once, or in as short a space of time as possible. In ten or twelve minutes, he thinks it may be ascertained whether the quantity given will prove sufficient to afford relief; and if not, that another dose ought to be immediately given, and the repetition continued till a complete relaxation be obtained. His general conclusion is, that doses may always be safely given to such extent at once, as that any quantity which the case shall require, may be exhibited in the space of an hour.

In illustration of this practice, Dr. F. mentions the case of a young female, affected with tetanus, for whom he ordered twelve grains of opium every ten minutes until she had taken seventy-two grains, which removed the spasms, produced a comatose insensibility, slow, stertorous breathing, and a slow, full pulse. After an interval of eight hours, the spasms began to return, and the remedy was given as before and with similar result. In this manner the opium was repeated, at intervals of eight hours, for three days, when the spasms finally ceased and she recovered. During this period of three days, she took nearly eleven drachms of excellent opium.

Dr. F. assures us, that by his management of opium, he is always enabled to remove Colica Pictonum, or Devonshire Colic in about an hour, without ever knowing the disease to return, or any ill consequence whatever to take place. He supposes no preparation for the use of this remedy to be necessary, except the evacuation of the stomach, which is ordinarily effected by spontaneous vomiting before the arrival of the physician. The quantity of opium which he has found necessary to accomplish this sudden cure, varies from fifteen to forty grains, given, as it would seem from the mode of expression, at a single dose. Dr. F. has

never observed any difficulty in moving the bowels within twenty-four hours after the removal of the pain. And he thinks this mode of treatment by opium will be improved by joining with it a few grains of calomel in divided doses.

A case of Cholera, which is stated by Dr. F. induced him to prescribe opium as boldly as in the diseases already noticed. A gentleman of about sixty-five years of age, was seized with that disease in so violent a manner, that at the first visit and within a few hours after the attack, he was found with a cadaverous countenance, his nose and hands cold, the blood stagnant about his nails, the pulse hardly perceptible, and every symptom denoting speedy dissolution. The severe nausea, Dr. F. remarks, and the vomiting rendered his stomach unable, for some time, to retain the necessary quantity of opium. Sixty grains were given as soon as possible; of which ten were returned by vomiting. This dose soon removed every distressing symptom; but it is subjoined that his recovery was gradual and difficult.

We apprehend the class of cautious practitioners will decidedly condemn Dr. F.'s freedom in the use of opium, and unanimously pronounce it excessive and unwarrantable. In *tetanus*, indeed, there is ground to plead authority and numerous precedents for employing very large quantities of this remedy; and the same may perhaps be said in some degree, though undoubtedly with much more restriction, concerning *Colica Pictonum*. *Cholera* too may often require full doses to arrest that inordinate action which threatens suddenly to extinguish the powers of life; but the dose of *sixty grains* of opium for this purpose, to an unaccustomed stomach, would far exceed our utmost daring, and, as we conceive, would frequently render the remedy as bad as the disease. In saying this, we are not unaware of the signal deliverances from the jaws of destruction, which sometimes have been effected by an intrepid prescription; nor do we forget the improvements in our knowledge of the virtues and uses of remedies, which have often been made by a degree of boldness in the employment of them bordering upon temerity. Physicians, like poets,

> ——— "*may sometimes gloriously offend,*
> *And rise to faults true critics dare not mend.*"

But while we cannot undertake to question the accuracy of Dr. F.'s facts, nor to deny the results of his personal observa-

tion, we should really hope that the young and inexperienced practitioner will seldom venture to imitate this Herculean energy in combating diseases, which no common discernment can regulate, and which nothing but decided and indubitable experience can possibly justify.

After opium, Dr. F. proceeds to offer his opinions on *Stramonium*, confining himself, however, to its use in *epilepsy*. He prefers the form of saturated tincture. In his mode of using it, he considers epilepsy as distinguished into three species. In the first, the fits occur daily or very frequently. In such cases, after cleansing the primæ viæ, the patient is to be kept constantly under the influence of the remedy, by giving every day one or two doses, according to the urgency of the symptoms. Dilatation of the pupils will mark the requisite dose. By this means, he asserts, the fits will generally be suspended, and the habit of recurrence gradually broken.

In the second species of epilepsy, the fits recur at regular periods, such as monthly, or the patient is warned of their approach by some previous feelings. In such cases, the remedy is to be used whenever the attack is apprehended, and to be discontinued in the intervals.

In these two species of the disease, stramonium, assisted sometimes by chalybeates, seems scarcely ever to have failed of success. Dr. F. relates cases of its efficacy which place the remedy in a high point of view.

The third species of epilepsy, described by Dr. F. is that in which no regular period is observed, and in which no premonitory sensations are felt. In this case, he supposes the fits to be excited by some other disease, or by some irregularity of the patient. Here stramonium cannot be used occasionally; to give it long impairs its efficacy; in these cases, therefore, it is seldom successful.

Cicuta is the last of the narcotics which engage Dr. F.'s attention. He speaks highly of its efficacy in scrophulous affections of the abdominal viscera, and in jaundice.

The *second* article in this collection contains an account of a case of *ruptured uterus*, by Dr. Prescott. The various circumstances preceding, accompanying and following the fatal rupture in this case, are distinctly related, and will serve to impress on the mind of the practitioner the importance of the preventive treatment, whenever it can be employed. It is to be lamented that the resources of art are so few and so little to be relied upon in these unhappy cases.

In the third article, we are presented with a case of compound dislocation of the tibia, at the ancle-joint, accompanied with a fracture and loss of part of the substance of the fibula, and likewise with a fracture of the femur in two places; successfully treated and described by Dr. RICHARD HAZELTINE. This case illustrates strongly the resources of nature in surmounting violent injuries, especially in situations where the patient can enjoy the blessing of pure air, and suffers no annoyance by the exhalations of cities or hospitals. The advantages arising from loss of blood in great quantity, towards lessening the effects of violent injuries, are likewise very instructively displayed in this case. The rules of surgery, as well as the healing powers of the constitution, are often materially varied by the difference between the wholesomeness of country air and the pernicious effluvia of hospitals, or other crowded and unventilated situations.

The fourth article presents us with the narrative of a case of preternatural retention of urine, in consequence of external injury. In this case, for an account of which we are indebted to Dr. JAMES THACHER, it became necessary, in the failure of every other expedient, to resort to a puncture of the bladder by the trocar above the pubes. By this operation the desired relief was obtained, and in the end the patient happily recovered.

In the fifth article, we find the history of a wound of the femoral artery, which terminated fatally. This case is very circumstantially and distinctly related by Dr. JOHN C. WARREN, whose narrative of the injury and its effects, of the operation and its consequences, as well as his reflections on the nature and termination of the accident, all evince a correct and discriminating judgment. We agree with Dr. W. in thinking that the probability of recovery would have been much increased in this case, if the operation had been performed before the vigour of the arterial system was exhausted by such repeated hemorrhages.

Article sixth contains some observations on Worms infesting the human body; communicated to the society by Dr. JOSHUA FISHER, vice-president. As a specimen of the manner in which the subject is treated in this practical paper, we offer the following quotation.

"The species of worms most frequently found in the first passages of the human body, are, the teretes or lum-

bricoides, the ascarides, and the tænia; I have met with the trichurides, but very rarely.

"The teretes resemble the common earth-worm generally; but the difference is sufficient to prove them a different species. In some cases they are found to be very numerous; one thousand and nine were discharged from a child in the space of ten or twelve days. In common cases the amalgam of tin never fails to kill them. I have combined the tin and quicksilver in various proportions, and added different substances to render the amalgam pulverable. The following formula is considered the best;—to five parts of melted tin, add two parts of quicksilver; mix them, and add one part of testaceous powder; keep the amalgam melted, and rub until the smallest parts of it disappear: when the mixture is cold, a little additional levigating will reduce it to an impalpable powder. Let three or four drachms of this powder be divided into twelve doses, two of which are to be given in a day. This quantity will generally be sufficient for a child; but sometimes six or even twelve additional doses will be required. If we wish to keep the bowels more open, a little calomel may be added. Should the symptoms be very severe, a large dose of calomel should be given; otherwise we may lose the patient before the amalgam has time to operate. Sometimes we find the patient in a lethargic stupor, and the action of the stomach, of course, suspended; at other times, the canal is in a state so debilitated and relaxed, that the powder passes undissolved; in neither of these cases will this preparation produce any effect. Worms, killed by tin, or its amalgam, are never discharged entire, but are either partially or wholly digested.

"I had under my care a boy of about three years, who had the usual symptoms of worms. I gave the tin to no purpose. In the course of six months every kind of anthelmintic was tried in vain. At length I gave him a scruple of calomel, and, before it operated, injected the smoke of tobacco till it passed by his mouth; during the operation of the medicine, which was very severe, he discharged one of the teretes in a spiral coil, like a bean vine which had twined round a small twig; it was incapable of being extended to a straight line, and had obviously grown in that form. I presume that it must have been lodged in the appendix vermiformis. A worm in that situation sometimes.

and I believe generally, proves fatal. This is the only instance, within my knowledge, of its being dislodged.

"The ascarides reside principally in the rectum. A brisk cathartic will remove part of them; but medicines which have to pass through the stomach cannot be depended upon; anthelmintic enemas, such as oil, a solution of sal. marin. or sal. mart. repeated once in a day or two, for five or six times, very seldom fail of destroying them.

"The tænia may be destroyed by Fowler's mineral solution; for this purpose the patient should take it, two or three times every day, in as large doses as the stomach will bear; and continue the use of it till the worms are destroyed. Hitherto this remedy has not disappointed me in a single instance.

"About seven years ago, a man applied to me, who, for many years, had been afflicted with the tænia, and in consequence of it, with severe convulsive fits; he had consulted physicians in various parts of this continent, in Europe and the West-Indies, without any apparent advantage, excepting temporary relief. Soon after taking the solution, he voided a piece of the tænia of ten yards, and afterwards another piece of fifteen yards in length, besides a large quantity of shorter pieces, and cucurbitini, or single joints. After the worms were removed, his fits returned occasionally for a year or two, but less frequently than before: and I believe that at present they have left him entirely.

MEDICAL & PHILOSOPHICAL NEWS.

DOMESTIC.

Observations on the Weather and Diseases, in the Winter of 1808–9, *in the City of New-York: By Dr.* RICKETSON.

TWELFTH Month (December) began pretty cold, and continued so nearly throughout, though not without some intervals of moderate, pleasant weather. Early in the next month, the cold increased; and the ancient and common observation, that, "as the days lengthen, the cold strengthens," was verified. This, though a general remark, has not always held; for, on reviewing my meteorological register in the winter of 1790–1, I find the Twelfth Month much the coldest.

The coldest days which I have noted in the present winter, were the 13th and 25th of First Month, when Fahrenheit's Thermometer stood at 13; and the 9th of Second Month, when the same stood at 6 degrees. These were called great extremes of cold by some, but they were far less than what occurred on the 10th of First Month, 1797, when I observed the quicksilver to stand at 20 degrees below 0, in the above scale, in Dutchess County. It is said, that it stood at Albany, on the 12th of Second Month of this year, at 17 below 0. There fell many snows, but none deeper here than 10 or 12 inches, which rendered it most of the season good sledding; of the convenience of which, our citizens availed themselves.

We have had but few rains this winter, and very little thawing or open weather of long continuance: in short, the season resembled, both in steady cold and snow, the winters of former, more than those of latter years. There was very little southerly wind during the whole winter.

There occurred early in the winter, and continued through the season, a great prevalence of colds and catarrhal complaints, and particularly a painful affection about the head and throat; which, in some instances, attacked the muscles, inducing rheumatic toothache; and, in many others, settled

on the tonsils, or other adjacent glands, constituting quinsies, attended with highly inflammatory symptoms, and requiring early and plentiful evacuations by bleeding, purging, and sweating. This affection of the throat was very common; and, in some families, it passed generally through them. Some cases of violent colds were observed, approximating nearly to influenza.

Pneumonic and rheumatic complaints were among the diseases of the season; but not more common than usual, within my observation. The same may be said of typhus fever, croup, and consumption. The hooping-cough and mumps have been prevalent; and several deaths of the former have occurred.

The scarlet fever has continued to prevail throughout the winter; and, in some instances, pretty severe; though far less so than I observed it in 1793 and 4, when it was attended with great mortality. This being a disease of high excitement, may not the digitalis be usefully administered in the early stage of it?

I lost a patient of dyspepsia, whose stomach I suspected to be in a scirrhous state, which, on dissection after death, I found to be the case; the small or lower extremity being much contracted, and the pylorus almost closed, which prevented nourishment from passing into the intestines. My suspicion being strong, I found, on minute inquiry after death, that he had been in the practice of drinking spirituous liquors, though rarely to the degree of intoxication. This instance ought to be an alarming caveat to tipplers and dram drinkers, who, though they may not be drunkards, are in constant danger of being injured in their health, and of being hurried to a premature grave.

Notwithstanding the established efficacy of the vaccine disease, when properly conducted, in securing the human constitution against the small-pox; and notwithstanding the exertions and practice of many physicians to encourage the former, and to discourage the latter, with the kind offer of the Cow-Pock Institution, or Dispensary, in this city, to extend its benefits to the poor, the small-pox still keeps alive; and it is true, though unpleasant and strange to relate, that about seventy deaths of this loathsome disease, which might be expunged from the list of human maladies and suffering, are recorded in this city's bills of mortality for the winter.

That the prejudices of mankind cannot be suddenly removed, was seen in the introduction of the inoculation for the small-pox; and is further exemplified in the practice of vaccination, which will, perhaps, never be without its opposers. This calls for great vigilance and perseverance in humane and philanthropic minds to discourage by every exertion a sore and mortal disease, and to extirpate it by one so mild as hardly to deserve the name, and which promises to be one of the greatest blessings to the human race.

It would doubtless be acceptable to the public, to have published quarterly or yearly, a comparative view of the amount of mortality, with the several diseases, in the principal cities and towns throughout this continent.

New-York, 2d Mo. 23th, 1809.

Prize Medal.

The Medical Society of Philadelphia, being desirous to promote the cultivation of EXPERIMENTAL MEDICINE, and conceiving that their views in this respect may be best effected by holding out as an incentive to individual enterprise some *Token of Distinction*, have resolved to offer a GOLD MEDAL of the value of fifty dollars, for such an essay as may meet with their approbation on the following question: *What is the process which nature employs to nourish the Fœtus* in Utero?

The Society, in order to prevent any mistake or perplexity, now explicitly state the regulations which they have adopted, and mean strictly to observe.

First—That the Essays for the Medal must be inquiries into the subject, conducted by experiments *pertinently devised* and *accurately executed.*

Second—That the Essays must be written in the English language.

Third—That the Essays must be transmitted, post paid, to either of the Corresponding Secretaries of the Society, Dr. Joseph Klapp, or Dr. Samuel Benezet, in time to be received on or before the first day of December next.

Fourth—That with each essay the name of the author must be sent in a separate enclosure, not to be opened by the Society unless the Medal shall be awarded to the essay.

Fifth—That in case the author of one of the essays shall disclose, or cause his name to be disclosed, the Society

deeming his pretensions to the Medal to be thereby forfeited, will discard his essay from their adjudication.

JAMES SMITH,
Recording Secretary.

Philadelphia, February 20, 1809.

Letter from the Secretary of the Treasury, accompanying a Bill authorizing the President of the United States to grant permission to vessels to depart from the ports of the United States, for the purpose of importing Salt. Presented January 13, 1809.

Treasury Department, January 7, 1809.

SIR,

I had the honour to receive your letter of 27th ultimo, requesting such information as I may possess, respecting the means of obtaining immediate and permanent supplies of salt, from the establishments within the United States.

The annexed statement (A) shews the annual consumption of imported salt, for each of the calendar years 1802—1807, after deducting the quantities used for the cod fishery, and also for pickled fish and salted provisions exported from the United States.

The annual average is almost three millions of bushels, weighing each 56 lbs. equal to 75,000 tons, and requiring, in fact, 125,000 tons of shipping for its importation. It must, also, be observed, that the deductions above mentioned, being calculated by the allowances on fishery and drawbacks, and the allowance being, in fact, greater than the amount of duty on salt employed in the cod fishery, the quantity of imported salt, actually consumed in the United States, is greater than appears by the statement.

The statement (B) is intended to shew the gross amount of salt annually imported for the years 1802—1807, and the countries from which imported. The manner in which the accounts are kept at the treasury, has rendered it more convenient to give the amount in this instance, for the years ending the 30th September, than for calendar years.

It will be perceived by the statement (A) that the domestic establishments have not increased, even in the same ratio as the population of the United States; for the average of their consumption of imported salt is greater for the last,

than for the first years of the statement. Considering, also, the regularity of the importations, and the well known fact, that the article has been principally imported as ballast from England, there is reason to believe that the quantity of salt now in the country is very inadequate to the supply of the present year; and I am confident that there can be no reasonable expectation of the deficiency being supplied, for that year, from internal resources.

I am, therefore, clearly of opinion, that every encouragement should be given to immediate importations, and that measures should, at the same time, be adopted for the purpose of ensuring, for the succeeding years, a supply from domestic establishments.

The only means of promoting immediate importations, appear to be, 1st, either to except salt from the operation of the non-intercourse act, or to put off the general operation of that act till the 1st of July next; which last alternative appears, in every respect, the most eligible. 2dly, to authorize the President to permit American vessels to proceed, during the continuance of the embargo, to such foreign ports as may be designated by law, for the sole purpose of bringing in cargoes of salt.

The internal resources must be drawn from either the salt springs in various parts of the western States, from the Onondago springs, in the State of New-York, or from the Atlantic shores.

The high price of salt in the western States, does not arise from the actual expense incurred in manufacturing the article, for it does not cost more than 75 cents per bushel at the Indiana or Wabash saline, and yet its market price has not been less than two dollars. It follows, that the price is kept up by reason of the quantity made being much less than the actual demand, and, therefore, that no considerable addition can be expected from that quarter; none, certainly, beyond the wants of that part of the country.

The quantity of salt made at the Onondago springs, may certainly be considerably increased. I have been informed, that about 300,000 bushels are now annually made; and that the amount might, perhaps, be increased to six hundred thousand. On that subject, however, I cannot form a positive opinion; but am satisfied that the most sanguine calculations fall very short of the annual consumption of the United States; and that the principal resource to be relied on, is the increase of establishments on the sea-shore.

These may be multiplied in numerous places, from Massachusetts to Georgia; and, although the repeal of the law laying a duty on importation has checked their progress, experience has proven that capital may be advantageously employed in that manufacture. I think that nothing more is necessary to induce, at present, the application of a capital sufficient, in a short time, to produce an adequate supply, than the certainty of not being ruined by the competition of large importations at reduced prices. But it is doubtful whether it would be most eligible to effect that object by a bounty on the domestic manufacture, or by a renewal of the duty on the importation, to take place after the 1st January, 1810, and to continue for years. A combination of both would, perhaps, be best calculated to insure success, and also most equitable. But a duty on importation alone is the easiest to execute, and is not liable to any constitutional objections.

The encouragement thus given to domestic establishments, may, indeed, during the number of years to which the duty or bounty would be limited, increase the price of salt. But that temporary inconvenience should be cheerfully submitted to, if an adequate supply of that necessary article may, thereby, be ever after ensured on reasonable terms, and from internal resources, not liable to be affected by war, or by any other interruption of commerce.

ALBERT GALLATIN.

(A)

A Statement, shewing the quantities of salt imported into the United States for each of the years ending on the 31st of December, 1802, 1803, 1804, 1805, 1806 *and* 1807; *exhibiting also the quantities re-exported, the allowance made for salt used in the curing of fish and salted provisions, and the quantities actually paying duty for said period.*

YEARS.	Imported.	Exported.	Allowances for ſalt uſed in curing fiſh and proviſions.	Paying Duty.
	Buſhels of 56lb.			
1802	3,948,434	34,235	669,890	3,244,309
1803	3,542,872	23,635	758,589	2,760,648
1804	3,433,996	31,047	963,708	2,439,241
1805	3,782,328	12,503	953,370	2,816,455
1806	4,262,704	84,850	993,755	3,184,099
1807	4,597,033	111,186	943,175	3,542,672

(B)

A Statement, shewing the quantities of salt imported into the United States for each of the years ending on the 30th September, 1802, 1803, 1804, 1805, 1806, *and* 1807.

	Years ending 30th September.					
	1802	1803	1804	1805	1806	1807
Europe, Great Britain,	1,242,309	1,423,882	1,261,234	1,360,324	1,938,366	2,555,817
Portugal,	548,129	817,320	549,467	266,702	367,894	561,833
Spain,	296,182	411,267	276,291	622,591	225,379	404,110
All other parts,	147,639	84,831	92,966	113,251	198,698	196,836
Africa, Cape de Verd Islands,	374,719	220,545	407,194	476,322	659,251	250,455
All other parts,	6,512	38,254	17,915	52,653	4,168	31,326
West-Indies, Britiſh,	806,411	771,111	829,254	715,169	500,526	593,753
All other,	142,704	95,593	45,558	45,264	47,332	77,499
Total,	3,564,605	3,862,803	3,479,879	3,652,276	3,941,614	4,671,629
Exported, (*a*)	704,125	782,224	994,755	965,873	1,078,605	1,054,361
	2,860,480	3,080,579	2,485,124	2,686,403	2,863,009	3,617,268

(*a*) Including both the ſalt actually exported and the allowances for ſalt uſed in curing fiſh and proviſions.

Watt's new method of treating Diabetes.

Mr. Robert Watt, of Paisley, a member of the faculty of physicians and surgeons of Glasgow, has lately published (and sent us) a book containing *Cases of Diabetes, Consumption, &c.* A fatal case of this disease which occurred to a labouring man, 35 years of age, taught him that little dependence was to be placed upon a course of animal diet. In a second case of another labourer, aged 36, the confinement of the patient to animal food was not only loathsome, but productive of no good. The coughing up of some mucus streaked with blood, suggested to Mr. W. the propriety of venesection. A vein in the arm was opened, and at several successive operations, performed at the distance of one, two and three days, a quantity of blood, amounting in the whole to 108 ounces, was taken away in less than two weeks. This practice was attended with relief to his feelings, every time; notwithstanding an exhausting discharge of 12 pints of urine daily, a slow, feeble and irregular pulse, increasing debility, swelled feet and legs, and other alarming symptoms. The treatment ended in a complete recovery. But pills of carbonated ammonia, antimonial powders, lime-water, and a flesh diet, were also employed. Mr. W. however, considers the main and efficacious remedy to have been blood-letting.

A third case related by Mr. Watt, is of a student in the University of Glasgow, aged 23. The circumstances were unusually distressing to the patient, and embarrassing to the physician. Encouraged by the success of the preceding case, and unawed by the sinking condition of his patient's health, Mr. W. had recourse to the lancet. In six bleedings, performed under circumstances of the most untoward and discouraging aspect, above 100 ounces of blood were drawn. The pulse, from being weak and intermitting, grew firm and regular, and health was at length perfectly restored. The treatment was indeed aided by abstinence from animal food, wine, spirits, and every thing of an irritating and heating nature; by gentle evacuants, diluents and occasional opiates; by blisters to the perinæum and kidneys; by injections, and by lime-water. But venesection seemed to be the most useful remedy, in this very obstinate case.

A woman, aged 57, suffering under diabetic symptoms, was also treated by bleeding. In the course of a week, 50

ounces were taken away. Evacuating the intestines with castor-oil, the application of blisters to the lumbar region, salivation by pills of calomel and ipecacuanha, and an adherence to spare diet, were each of them auxiliaries in this case, which terminated in the recovery of the woman's health.

The fifth and last case related, is of a labourer, aged 66, for whom very little was done, and wherein assistance was probably called too late, to be of any service. The history, however, illustrates this formidable disease, by showing that the diabetes was transformed to dropsy, and this latter into a fœtid and incurable diarrhœa.

In enumerating the symptoms, they are brought thus into one view; wherein a single paragraph contains a summary of the whole: "The appetite was better than in health; uneasiness in the stomach after meals; thirst urgent; the mouth dry and parched; tongue white and foul; tough disagreeable mucus in the throat; depraved taste; skin dry and unperspirable; considerable emaciation; uneasiness and aversion to exercise; loss of strength; pain and weakness in the region of the kidneys; irregular, generally costive state of the bowels; urine more than natural in quantity, variable in taste and smell, but not urinous; frequent and urgent desire to make water; some degree of inflammation and uneasiness about the external orifice of the urethra; loss of virility; chilly state of body; cold feet; a tendency to œdema; heat and uneasiness in stomach and bowels; acid eructations; flatulence; eyes muddy and painful; indistinct vision; vertigo; head-ache; dyspnœa on the least exertion; gums spongy and ulcerated; weight about the præcordia; a tendency to sigh; listlessness; mind weak and peevish; spirits greatly exhausted."

From this character of diabetes, the author concludes that it has a very exact correspondence with the hypochondria and hysteria of Mandeville; the English malady of Cheyne; the spleen and vapours of Robinson; the febricula of Manningham; the nervous diseases of Perry and Whytt; the chronic weakness of Withers; and the nervous temperament of Trotter.

Parisian Journal of Medicine, Surgery and Pharmacy.

By the attention of our friends in Paris, we have been favoured with the numbers of Vol. XVI. of the Medical

Journal of Paris. This excellent monthly publication is conducted with great ability by Messrs. Corvisart, first physician to the emperor; Leroux, honorary physician to the king of Holland; and Boyer, first surgeon to the emperor; all three professors in the school of physic at Paris. The great body of information which it contains, will afford us many original and genuine materials, for our own work.—And arrangements are already made for ensuring the future numbers, as they come from the press.

Hunter's Latin inaugural dissertation on ethereal fluids.

The Latin dissertation published at Edinburgh in June, 1808, by our countryman FRANCIS HUNTER, of Rhode-Island, in compliance with the statutes of the university, for obtaining the degree of doctor of physic, is very reputable both to the author and the institution. The subject is *De Etheribus*, by which he means those fluids which vessels will not contain, and which he distinguishes by the generic name of *Ethers*. He treats of them chemically; but the one which engages his chief attention, is light. After reviewing the discoveries of Newton, Scheele, Sennebier, Herschel, Ritter, Englefield, and Wollaston, he considers that light is a compound of two ingredients or elements, one of which is *phlogiston* and the other *causticum*. The distinguishing character of the former is to *deoxydate*, and the latter to *heat*. The power of reducing burned or calcined bodies, is exactly in the inverse order, by which the prismatic spectrum gives out heat. The violet ray, for example, which contains the faintest heat, possesses the strongest power of deoxydation: and *vice versa*, the red ray, which contains the most heat, is endowed with the feeblest power to deoxydate.

On this ground, Dr. H. undertakes to explain the nature of the sun-beam, its resolution into prismatic and coloured rays, and the constitution of each of these, from the quantities of the *phlogistic* and *caustic* ingredients which compose them severally. The interesting argument which he employs against some parts of the Newtonian doctrine of light; the application of his own principles to explain the phenomena of lenses, mirrors, phosphorescence, the transmission of light through coloured mediums, and other remarkable particulars, have excited in our minds a desire to see a correct

version of this learned and ingenious tract into our own tongue, by the hand of the author. For it is really a pity that such a fine specimen of his industry and talents should be concealed in the darkness of a dead language.

Fraser's Botanical Tours.

The two FRASERS, father and son, still pursue their botanical researches in the United States. Their garden, near Charleston, (S. C.) is the great place of deposit, for the articles they collect; and from that central point, plants, seeds, and directions for their cultivation, are forwarded to various parts of America, and to Europe. Last summer they visited New-York, and made excursions through the country in its vicinity. On leaving New-York, it was their intention to traverse New-Jersey and Pennsylvania, as far as the Alleghany mountain; and then to explore the east side of that great dividing ridge, all along through Maryland, Virginia, and North Carolina, back to Charleston.

It is in compliment to the former of these botanists, that Michaux, in his Flora Boreali-Americana, named a new genus, which he constituted, *Frasera*. And one of the southern species of Magnolia, has, for a like reason, been denominated *M. Fraseri*, or Fraser's Magnolia.

Some of the most conspicuous of Mr. F.'s discoveries, relate to the beautiful family of *Phlox*. He has brought many of its wild species from their native woods, to the acquaintance of florists, and thereby added greatly to the elegance and variety of domesticated vegetables.

Major Pike's Travels in Louisiana and New Spain.

We formerly gave information of the expedition of this enterprizing officer, to the sources of the Mississippi, (M. R. Hex. II. Vol. IV. p. 376) and of his journey across the desert from the Missouri, to the Bravo (ibid. Vol. V. p. 297.) We are now rejoiced to learn, that he meditates to present the public with the entire narrative of his discoveries and observations, from his own pen. In this he proposes to relate the occurrences of note, during the expeditions he performed by order of the

government of the United States, during the years 1805—6—and 7, to the sources of the Mississippi, and through the western parts of Louisiana, to the sources of the Osage, Arkansas, Kanzas, Platte, Pierre Jaune, and Rio del Norte rivers. To those, the author intends to add, his tour through the internal parts of New Spain, when conducted through its provinces, by command of the captain-general, in 1807.

This work will consist of three distinct parts, and be comprehended in one octavo volume of about 400 pages. In the first part, there will be many remarks on the fur-trade in the north-western regions, and on the territorial lines between the United States and Great Britain. In the second, it is proposed, among many other matters, to detail many particulars concerning the aborigines of the central parts of North America. The third part will comprehend the remarks made by this traveller, as he passed through Santa Fe, Biscay, Cocquilla, Seubra, and Taxas, the dominions of Spain bordering on the territories of the United States, on the south-western frontier. The work will be accompanied with maps and charts of all the regions visited by the author, and of so many other parts of Louisiana and New Spain, that it will exhibit an extensive and highly instructive view of the parts of North America, lying between the river Mississippi and the rocky mountains.

Remarks on the singular disease of the head and hair, which afflicts the inhabitants of Poland.

Mr. Boyer, first surgeon to Bonaparte, presented lately to the Philomatic society of Paris, his observations on the Plica Polonica, of which the following is a very brief account. This disease generally prevails among the poorest and most ignorant class of people; filthiness is the remote cause; diseases do not concur to produce it, except by developing filthiness, &c. and the *plica* ought not to be considered as their crisis, though sometimes united with scrophulous diseases; yet with these it has no necessary relation. A thick fur covering worn on the head, which, in the course of time, becomes incrusted with fat and oily matter, is the determining cause. Its formation and varieties depend on external and accidental circumstances. It never developes

itself suddenly, and to the above mentioned causes, a certain length of time is necessary to produce it. When the hair, from negligence, becomes matted, and is kept long under a thick bonnet, an oily fat glues it together, and it becomes intermingled with down. This gives birth to the disease. If the hairs be short, or exactly embraced by the bonnet, they form into a mass; and if they be longer, and hang beneath the covering, they divide into wicks of different lengths and forms. Whatever aspect the plica assumes, the intermixture of the hairs does not begin but at a certain distance from their root. Neither their root, body, nor extremity offers any change of form, volume, nature, or consistence: they do not give out blood, nor when cut do they exhibit any symptoms of sensibility. It is not preceded, accompanied, or followed by any peculiar phenomenon. Of five women whom Boyer inspected in the lazaretto of Posen, four had this malady; of these four, one shewed all the symptoms of a highly scrophulous affection; another had the venereal disease; the two others were in good health; the fifth, suffering by an internal malady, lived with the others without contracting the plica. This disease, among the Polanders, is an object of respect, and almost of religious worship. To cut the hair, would, in their opinion, expose the individual to frightful evils. Boyer thinks that this operation must be done with caution. A high and constant temperature, the perspiration it occasions, the irritation excited by a swarm of lice living under the *plique*, the constant secretion of a serous matter, of blood, and of pus, of which they are the cause, become, in the course of time, a habit, which must not be broken without precaution. Boyer found none of those extraordinary cases mentioned by physicians. The plica ought therefore not to be considered as a disease, but as a peculiar state of the hair, occasioned by filth and nastiness, and subject to the correction of medical police.

Cure of Lunacy.

Professor Pinel, during less than four years, has cured 444 maniacs, of 814, the number contained in the hospital La Salpetriere, destined for incurables. Of 36 individuals, struck with accidental madness, twenty nine have recovered

the use of their reasoning faculties. The learned professor, who has so deeply interested all the friends of humanity, has read a report on this subject before the class of sciences of the French national institute.

Peruvian Plants.

Mr. Bonpland, the American traveller, has finished the first volume of Equinoctial plants, found in Peru, &c. The engravings are truly beautiful. There are many new genera and species, and several kinds of *quinquina*, unknown to other travellers and botanists.

Maclure's Geological Enquiries.

William Maclure, Esq. after a residence of nine or ten years in Europe, returned last summer to New-York, and immediately commenced a tour through the eastern and northern states, to explore their *Geological* constitution. We understand that this enterprizing and able traveller has already examined, to a considerable extent, Maine, New-Hampshire, Vermont, Massachusetts, Rhode-Island, Connecticut, New-York, New-Jersey, Pennsylvania, Delaware, and Maryland. And for the purpose of employing himself more advantageously during the winter, he went to Georgia, where, with less inconvenience from frost and snow, he might pursue his scientific researches in the south. It is reported that this gentleman has already delineated on a map, the principal strata of rocks, mountains and earths which he has observed during his journeys. It will be a highly interesting spectacle for naturalists, to behold this part of the earth pourtrayed on a sheet, so as to exhibit at one view, all its great ingredients, the whole of its predominating materials. The *primæval* or granitical strata may thus be signified by one colour, both as to the region they occupy and their extent. *Schistus* or slaty strata may be designated by some other colour; *calcarious* rocks of lime-stone and marble by a third; *sand-stone* by a fourth; and *secondary* or alluvial tracts, forming plains and vallies, may be distinguished by a still different paint. By adopting some such plan, the kind and prevalence of different strata throughout the country, and

their mineralogical structure, may be embraced by the eye, on a chart of this sort, at a single glance. As the completion of this design will both add to our stock of scientific knowledge, and reflect honour on our character as a people, we earnestly hope that Mr. M. will be enabled to go through an undertaking, for which he appears to possess uncommon qualifications.

A natural saltpetrous earth, discovered near the south branch of Potomac, in Virginia.

A gentleman who returned last autumn from an excursion upward to the western counties of Maryland, and the contiguous territory of Virginia, along the south branch of Potomac, relates that a manufactory of saltpetre has been established, near the bank of this river, from a native earth.

This earth is alleged to form a thick and extensive stratum. When dug out, it only requires powdering to make it fit for use. In order to work it to the best advantage, it is necessary to mix with it a proportion of wood ashes. This is obtained on the spot, by burning some of the forest trees, which grow abundantly thereabout. The potash afforded thereby, attracts the saltpetrous acid from the earthy basis, to which it appears to be naturally associated, and constitutes with it, proper saltpetre. This neutral salt, thus formed, is then separated by lixiviation, evaporation and crystallization, in the usual manner. It is reported that the proprietor of the works erected for preparing saltpetre, has already made a lucrative business of it.

A small specimen of this curious natural production, was presented to Dr. Mitchill, by Thomas Law, Esq. It had the form and consistence of a bolar earth. Its colour was rusty or reddish brown. The coherence of the lumps was so moderate, that they could be easily scraped by the finger-nail. There was every reason to conclude that the principal part of the composition was argillaceous. Some of this native earth being pulverized and subjected to the operation of sulphuric acid, instantly emitted visible fumes, and these possessed the peculiar flavour of nitrous acid. Another portion of the powdered earth was mixed with pure water, for the purpose of having its saltpetre extracted. Pieces of white paper were dipped into this watery solution, and gently dried. They were then set on fire at the blaze of a candle, while

other pieces of the same paper, that had not been so dipped and dried, were inflamed beside them, for the purpose of comparative trials. And there was the plainest evidence, that those which had been soaked in the lixivium, exhibited more of sparkling and deflagration than those that had not. But the flashes were small, and the consumption of the paper by no means rapid. There was no reason to believe that the earth, although charged with an abundance of saltpetrous acid, contained any more than a very small quantity of the perfect saltpetre with a basis of vegetable alkali. The quantity of the material having been expended in making these two leading experiments, there was no means of prosecuting the inquiry any further.

Here now is an account of an extensive layer of saltpetrous earth, removed very far from the thick settlements of man, and not formed from the ruins of organic matter.—Though putrefaction is one of the processes forcing the elements of the saltpetrous acid into chemical union, it is certainly not the only one. In the present case, the acid must have been formed in some other way; and the production of it in the great calcarious caverns of Kentucky, Tennessee and Virginia, as described in our Hex. II. Vol. III. p. 86, is just as remote from the formation of it by corruption. That there must be some other mode of producing the acid (and the alkali too) seems clear from the additional evidence on this obscure, though curious subject, contained in our Hex. I. Vol. VI. p. 364.

It has been usually stated by writers on chemistry, that saltpetre is produced only where the air is still, stagnant, and moist; that it is not found in places exposed to the sun; that it is produced no where but in calcarious or marly earths and stones; and that a temperature too hot or too cold is equally injurious to its formation. (See Chaptal's Elements, &c.)

The foregoing facts are almost directly contradictory to this statement. But there are others, drawn from Asia, which correspond exactly with those which America furnishes. "Bengal, for example, is the country" (as Mr. Cossigny observes in his *Recherches physiques et chimiques sur la fabrication de la Poudre à Canon, &c. p.* 72) "which supplies Europe with the greatest quantity of saltpetre. It is in the Bahar, around Patna, in latitude 25°. 55′. where the greatest quantity is collected, and is transported thence by the Ganges to the European establishments on the banks of

that famous river. The soil of the fields, exposed to the scorching sun of this country, and to all the winds, is naturally saltpetrous; and these soils are argillaceous. This fact cannot be contested, because we find lumps of the crude saltpetre of Bengal, enveloped in clay, sometimes grey, and sometimes reddish. As there are various qualities of saltpetre, there are parcels brought to market in well formed and very white crystals. But this has, without doubt, undergone purification in the country." Again, the same ingenious and acute author observes, p. 77, " that all the saltpetrous earths of France turn out a portion of sea-salt on boiling, as has been remarked by this author (Chaptal) and by all who have written before him. Those of Bahar afford none at all. It is a constant observation made by us in the Isle of France, where usually the saltpetre only is employed that comes from Bengal, and which is formed in clayey soils: More of an observer than a chemist, I stick to the fact."

In the supplement to his book on the manufacture of gunpowder, page 2, M. Cossigny declares, in opposition to Mr. Chaptal, " that both in Bengal and Spain, saltpetre is found in places uninhabited by man:" and he quotes Mr. Le Goux de Flaix (*Tableau de l'Indostan, tome 2, p. 389*) as affirming, " that in the Bahar, they *dig the soil to a great depth; and experience proves, that the deeper the holes are, the sooner the exhausted earth becomes re-charged with saltpetre.*" This officer was born in India, and had been at Patna. " I have seen" he adds, " excavations of more than one hundred and fifty feet, which gave saltpetre in prodigious quantity. They extract, commonly, from twelve to fourteen ounces of saltpetre from a cubic foot of the earth."

This subject merits a deeper inquiry, in a scientific point of view. And we hope that additional information will be transmitted to us, concerning the topography of the region on the south branch of the Potomac, where this vast layer of saltpetrous earth is said to exist.

Michaux's Botanical Collections.

Mr. Michaux, the younger, since he published his book of travels beyond the Alleghany mountains, (See M. R. Hex. II. Vol. II. p. 406) has made a second botanical visit to the United States. After having made an extensive survey of

the country, particularly of the middle and western states, he returned in the course of the last autumn to France, where we learn he has safely arrived. This indefatigable naturalist, it is said, has not contented himself with describing the vegetables of the parts of North America which he visited, gathering their seeds, making dried herbariums, and transplanting the more rare and curious species of plants; but he has paid particular attention to their economical uses, and a most extensive collection of woods for timber and dyeing, of barks for tanning and medicine, and of the other parts of American plants, for their several uses in the arts, has been transported to Europe. Such is the enterprize and industry of a foreign government, that there can be little doubt that one of its agents has carried to Paris a more complete assortment of subjects, to display the botanical productions of the United States, than any individual or institution in our nation can furnish.

Tussac's Flora of the Antilles.

During the year 1808, Mons. F. R. de Tussac, planter, from St. Domingo, published in Paris the prospectus of a work, to be entitled *Flore des Antilles, ou Histoire générale botanique, rurale et économique des végétaux indigènes des Antilles, et des exotiques qu'on est parvenu à y naturalizer:* i. e. "A flora of the Antilles, or a general, botanical, rural and economical history of the indigenous vegetables of the Antilles, and of the exotics that have been naturalized there." The plants are to be described from nature and arranged according to the sexual system of Linnæus, and the natural method of Jussieu. And the work will be embellished with plates, designed, engraved and coloured with the greatest care.

Encouragement for discovering Antimony in the United States.

Considering that there were no domestic supplies of Antimony, Congress enacted in the year 1803, that metallic antimony might be imported free from impost. This was

for the special purpose of encouraging the type-manufacture. Hopes were afterwards entertained, that a mine of sulphurated antimony existed at Sagherties, in the state of New-York. Mention was made of this in M. R. Hex. II. Vol. IV. p. 304. But the expectations thereby raised, do not appear to have been realized. The increased demand for types, and the difficulty of procuring antimony from abroad, has induced Messrs. Binny and Ronaldson, letter-founders, of Philadelphia, to write a circular letter on the subject. This we insert with pleasure, and recommend it to the attention of our mineralogical friends. Their address is in the following words:

"The present state of the commerce of the United States, arising out of the conduct of the belligerent powers, having shown our wants, and pointed out the necessity of calling to our aid such of the natural productions of the country as our knowledge and research might enable us to discover; with a view to this important object, we particularly solicit your attention to the article of antimony, which is essential in the manufacture of printing types, and which has not hitherto been discovered in this country. Bismuth would also be a great acquisition, and profitable to the owner of the mine. As it is highly probable that articles, which abound in so many parts of Europe, are not totally wanting in this extensive country, we earnestly request you to make the necessary inquiries in your neighbourhood; and, should you discover any thing which promises a favourable result, to transmit an account of it to us."

We copy from a newspaper of November 22, 1808, the following article, without however knowing on what authority it rests:—

"Important Discovery.—At this unexampled crisis, when the despotic powers of Europe are exerting themselves to destroy our commerce, it is a satisfaction to be able to inform our readers of any discovery, however trivial, which tends to shew the world the extent of our internal resources, when necessary to be called into action. It is with pleasure we announce, at this time, that an immense quantity of *Antimonial Ore* has been discovered in the state of New-Jersey, superior in quality to any imported. Its importance in promoting the useful arts is well known. It forms the principal material in the manufacture of *Printers Types*,

and the basis of *many* medical preparations. In the course of a few days we shall be enabled to give a more circumstantial account of the discovery."

The enormous extent of Imprisonment for Debt, in New-York.

The report of the Humane Society, for 1808, contains some very remarkable and highly interesting facts. During this period, there have been upon their monthly returns of debtors confined in jail, one thousand and twenty-five persons who have been supplied by the society with food and fuel. They have delivered from their soup-house 24,761 quarts of soup; of which 20,039 have been delivered to debtors in jail; 4,049 have been delivered to the poor, who presented tickets at the soup-house; and 673 have been sold at 3d. per quart.

The donations and subscriptions have amounted, in cash, to $1,782, 79 cts. Some donations of meat and vegetables have also been received. The above mentioned sum has been expended in supplies of fuel and food to debtors confined in the jail of the city; and there now remains a balance against the society of between three and four hundred dollars.

As the society is now at no expence for house rent, the increased expenditures of this year have arisen from the vast number of indigent debtors, with which our jail has been crowded. In the year 1807, the debtors upon the society's list were 298; they have increased to 1,025.

As nearly the whole of those who are the objects of the society's bounty, are persons confined for small debts, and as the number had increased so greatly, the society were led to enquire into the number of persons, who during the last year, had been imprisoned for debts under 25 dollars. They accordingly procured from the jailer, a return of those who had been so confined, and from his return it appeared, that from the 31st of December, 1807, to the 31st of December, 1808, there had been imprisoned, under executions from the several *Justices Courts* in this city, thirteen hundred and seventeen persons; of whom there were 591 females! and 726 males.

As to the sums for which they were imprisoned, there were for and from $25 to 15 — 371
15 to 10 — 267
10 and under — 679

1317

There were discharged by the 30 day act, 463
On giving their notes 432
Supposed to have paid, 422

1317

Thus, it appears, that 895 persons were imprisoned without producing any advantage to the creditors.

Curious effect of Lightning upon the Muscles of the Eye-Lids; communicated by Dr. S. Spalding, to Samuel L. Mitchill.

In collecting some facts respecting lightning, for the American Academy of arts and sciences, I was struck with its singular effects in the case of M. Whidden, which I have taken the liberty to transcribe for you.

" In the summer of 1773 while Miss Mehitabel Whidden, who has since married Mr. John Melcher, was at her uncle Samuel Hill's, in Portsmouth, in a back sitting room, all the windows being open, and she kneeling to make up a cradle, both her hands resting on a feather pillow, a flash of lightning entered her room, which by its intensity paralized the muscles of the upper eye-lids, so that they constantly hung over the sight of the eyes, giving the appearance of being half shut, and rendering her blind, except the upper eyelids were supported by the fingers, when she could see as well as usual. In about a week, she completely recovered the use of these muscles, whereby the inconvenience was removed. She felt no effects from the lightning in any other part of the body."

Malignant Fever in Connecticut.

The following extracts from the newspapers, afford partial information relative to an alarming endemic disease.

HARTFORD, January 25, 1809.

Spotted Fever.—The following cases of sudden and alarming mortality, have recently afflicted the family of Mr. Thomas Shepard, jun. in the parish of Wintonbury.

Mary, aged 4 years, died 8 hours after the commencement of the disease, on the 10th inst.—Henry, aged 25, in 21 hours, on Wednesday the 11th instant.—Mrs. Wealthy Shepard, aged 45, wife of Mr. Thomas Shepard, jun. in 13 hours, on Wednesday the 11th instant.—Wealthy, her daughter, aged 6 years, in 20 hours, on Thursday the 12th inst.

These unfortunate victims to a disease, the most formidable that has ever afflicted our country, died in 57 hours from the time the first became affected. Events so disastrous speak to all a language too plain to be misunderstood. They afford demonstrative evidence of the uncertainty of human expectations, and of the frailty of human life.

February 23.—A meeting of physicians will be holden on Tuesday the last day of February instant, at 10 o'clock A. M. at the house of Mr. Seth Lewis, in Farmington. The object of this meeting is to collect from such physicians as have been conversant with the disease commonly termed spotted fever, the result of their experience in that disease, and to communicate to the public the mode of practice best adapted to its cure.

To alleviate the fears of the people, already excited by the recurrence of this formidable malady, and to inspire them with confidence in the utility and efficacy of a plan of cure which shall be proposed, are objects of high importance. It is earnestly requested that every physician, who has had experience in this disease, will attend the meeting proposed.

March 9.—In our last paper was a remark, that it was rare indeed that we were called upon to record so distressing an occurrence as we had then to make public; since that time, however, a similar event has made it our duty to depict a new and unexampled scene of affliction. In the family of Jonathan Bull, Esq. of this city, the sudden death of three amiable daughters has spread a gloom, the sorrows of which it is our happiness that few have the misfortune to experience. In the afternoon, on Monday of last week,

Miss Nancy Bull was seized with the prevailing fever; before noon of next day she was a corpse, aged 28 years. Miss Hannah Bull was seized on Tuesday and died on Wednesday, just as her deceased sister was going to the grave, aged 32 years. Miss Rebecca Bull was seized on Wednesday and died the same night, and on Thursday last was buried in the same grave with her last deceased sister, aged 22 years. Reflecting upon so melancholy a picture, what can we do, but shrink into submissive and "expressive silence."

After writing the above paragraph, we had hopes that our distressing task was at an end—but alas! how vain are all human expectations!

On Wednesday died Mrs. Mary Dodd, wife of Mr. John Dodd, post-master, after an illness of four days, aged 56 years. The day preceding her death, Mr. Dodd himself was taken ill, and expired on Sunday morning, in the 65th year of his age. On the night following died his oldest son, Mr. John Dodd, merchant, aged 43 years, after a short illness. And on Monday died Captain Josiah Dodd, nephew of the late post-master, aged 30 years. Died also in the course of the week, two children of Mr. Josiah Pratt, jun.

March 30.—During the last fortnight, the distemper lately so fatal in this city, has in a great measure subsided. No new cases have, to our knowledge, occurred, and no cases now exist that are considered as dangerous.

Archer's explanation of the curative powers of Vaccination in Hooping Cough; addressed to Dr. Mitchill.

My letter to you on the benefit of vaccination for the cure of the Hooping cough, I have seen inserted in the Whig, of Baltimore, which, by a mistake of the printer, or in my letter to you, does not convey my ideas clearly. In that letter I recommended vaccination the second or third week of the hooping cough; or when the symptoms of the hooping cough are sufficiently manifest to determine that the person has that disease, then to vaccinate. When the vaccine disease has taken effect, and has proceeded to that period when the efflorescence around the inoculated part disappears, and a scab is formed, and this scab assumes a brownish, or a blackish appearance, the hooping cough will be checked, and cease with the vaccine disease. If this is not the idea conveyed in my letter to you, pray correct it in your valuable Repository.

FOREIGN.

MR. DAVY, in his introductory lecture to his last course in the Royal Institution, London, which was begun on the 17th of last December, amidst a great variety of other important matter, explained the theories of Stahl and Lavoisier, particularly with regard to combustion, and shewed in what their difficulties consisted; all of which he thought might be obviated by introducing the *positive* and *negative principle*, the former ever attaching itself to inflammable matter, and the negative to oxygen. Sulphur, and phosphorus, which, till within a few months, had been regarded as simple bodies, he had decomposed, and should be able to shew, by decisive experiments, that they consist of oxygen, hydrogen, and a certain basis. Charcoal had yielded to analysis, and proved to be composed of the carbonaceous principle and hydrogen: the *diamond* likewise was now found not to be pure carbon; but consisted of the carbonaceous principle and oxygen: and plumbago also he thought must be referred to the carbonaceous principle with a small portion of iron. Hence he was led to speak of the importance of the discovery of the new metals, *Potasium* and *Sodaum*, and of the still more important results to chemistry which these bodies were likely to produce. He had in the last course only exhibited these metals in very small portions; hereafter he should be able to gratify the audience with specimens of large quantities. As soon as he had made known his discoveries, the chemists in France and Sweden immediately repeated his experiments, and hit upon a different method of decomposing the alkalies by which the new metals were obtained more abundantly, than by means of the voltaic battery.

Mr. Davy next referred to the decomposition of ammonia, the base of which would combine with mercury, and in the proportion of only the one twelve thousandth part would render the metal solid, and by this operation reduce the specific gravity from thirteen, (that of mercury) to three, the specific gravity of the compound. The boracic and fluoric acids have been decomposed by Mr. Davy, but as

yet the muriatic acid had not yielded to the powers of his apparatus, though he fully expected it shortly would. That the bowels of the earth contained various ores of metals, had been long ascertained; but it was reserved for the discoveries of the present year to prove, that the different earths on which we daily walk, are also the repository of metallic bodies; of these he had decomposed four, namely, lime, magnesia, strontites, and barytes, all of which had produced metallic bases. From these circumstances he was led to conclude, that the two grand principles ever operating in nature, are the *inflammable* and the *oxygenous*. These, he said, will account for all the phenomena of volcanoes, and other subterraneous fires.

[*London Monthly Mag. Jan.* 1809.]

On the Apparatus adapted for deoxidating Potash by Iron. By Mr. Hachette. Phil. Mag. v. 32. p. 89.

Messrs. Gay and Thenard repeated at the laboratory of the Polytecnic school at Paris, the experiments of Mr. Davy in 1807. They afterwards continued the enquiry in a new point of view. They proposed to themselves the discovery of a substance sufficiently oxidable to take off the oxygen from the alkalies; and their experiments were followed with the greatest success. On the 7th of March, 1808, they informed the Institute of France, that upon treating potash with iron in the fire of a reverberating furnace, the iron deoxidated the potash, and made it pass to the metallic state.

M. Hachette repeated the experiments of Messrs. Gay and Thenard, at the laboratory of the Pages of Napoleon with the following apparatus. A quantity of iron filings was put into a gun-barrel, sufficient to fill that part of it which was inserted in the furnace; caustic potash was introduced into one of its ends not inserted in the furnace, and its extremity was luted; a tube of safety was adapted to the other end of the barrel, and a strong heat was then applied.

The furnace used was 25 centimeters (about ten inches) diameter, and was furnished with double bellows. While the furnace was strongly heated, the part of the barrel which contained the potash was cooled with ice. After the heat was continued for an hour, a small portable furnace of sheet

iron was applied to the part of the barrel that contained the potash, by which it was melted. The gun-barrel being inclined a little towards the tube of safety, the fused potash came in contact with the iron filings, and in an instant the hydrogen of its water of crystallization was disengaged by the extremity of the tube of safety, which was inserted under water.

This disengagement of hydrogen is a certain mark of the success of the experiment. When it slackens, from the liquid potash having cooled the iron, the small furnace placed under the potash, which keeps it liquid, may be removed, and the temperature be restored to the iron, which is necessary for its acting on fresh liquid potash. This last circumstance is similar to what takes place in the decomposition of water; for if too much water is poured on the red hot iron, the metal is cooled and the water passes off in vapour without being decomposed.

Before the potash was fused in order to make it pass to the iron, the part of the gun-barrel to which the tube of safety was adapted, and which serves as a refrigerant, was placed in ice.

In about half an hour from the moment at which the potash is fused, the disengagement of hydrogen ceases, and the operation is concluded.

When the furnace is quite cold, the safety tube is taken away, and the extremity of the gun-barrel is closed by a plug. To extract the metal, the gun-barrel is cut at the commencement of the part, which has served for a refrigerant, and the metal of the potash presents itself in the form of small brilliant laminæ, adhering to the sides of the gun-barrel. The greatest quantity is found close to the refrigerant; another portion is not condensed until it is very close to the plug of the safety tube: this last portion adheres very slightly to the gun-barrel, and the least effort is sufficient to detach it; it is even partly oxyded by the air admitted during the cooling of the furnace; and when the whole is received over naptha, this part is detached in laminæ, and exposes to view a white and brilliant metallic surface.

The portion of potash condensed nearer the furnace must be detached by a sharp chisel in the largest pieces possible; for in small molecules it inflames in the air, even at a very low temperature. When not detachable in large pieces, it must be kept in a gas deprived of oxygen, or in naptha.

M. Hachette extracted it from the gun-barrel by plunging it in oil.

Portions of amalgamated iron and metallic potash are also found in the gun-barrel; they adhere very strongly to that part of it which occupies the middle of the furnace; they become green in air, and are easily decomposed, as the potash returns in a very short time to its first state.

To obtain the metal of potash on a great scale conveniently, a gun-barrel should be used of a large diameter, which must be heated throughout a great part of its length; and in a tube joined to its extremity the liquid potash should be so disposed that any quantity of it desired may be let to descend, which should be volatilised before it is admitted to come in contact with the heated iron; another gun-barrel, divided in two pieces, should be placed at the extremity of the former, which would serve as a refrigerant, and could be opened in order to collect the metal.

The chief precaution necessary in this process is, that the potash should be as dry as possible. The metal obtained is rather heavier than that procured by electricity, and seems to contain a little iron, but is very proper for all analytical experiments. By the process used in this happy experiment of Messrs. Gay and Thenard, the metal of potash may be procured in considerable quantities. Mr. Davy is stated to have found this process to succeed perfectly.

[*Athenæum, Jan.* 1809.]

Origin and Progress of Mr. Davy's Investigations concerning the constitution of the Alkalies, &c.

The mere fact of the analysis of the alkalies, and alkaline earths, has appeared so astonishing to scientific persons in general, that they seem to have paid very little attention to the steps which led to this discovery; and the general method of investigation, to which alone Mr. Davy owes this particular result, seems to have been overlooked, though it appears to offer a rich product of new and important phenomena.

Mr. Davy, led by the delusive experiments of Messrs. Pacchioni, Peele, and Sylvester, to enquire if muriatic acid and fixed alkalies were formed by electricity from water, was gradually carried on to the discovery of facts which proved that electricity was a general agent of decomposition, that different bodies were naturally in different elec-

trical states, and that by altering these states, their affinities were altered; and that combinations or separations of elements were wholly influenced by electrical powers.

He found likewise that all bodies, containing an excess of oxygen, were naturally negative, and that all bodies (of known composition) containing an excess of inflammable matter, were naturally positive.

The fixed alkalies, and alkaline earths, were positive, but their composition was unknown. He inferred, from strict analogy, that they must contain inflammable matter; and by using the most powerful means for detecting inflammable matter in them, he showed that the analogy was perfectly correct.

The Bakerian lecture for 1806 appears to be a model for philosophical research; the results stated in the Bakerian lecture for 1807, are merely the consequence of prior investigations.

[*London Monthly Magazine, Dec.* 1808.]

TABLES *of a* NATURAL SYSTEM *of* MEDICAL SCIENCE, *and of the* FIRST PRINCIPLES *of the* MEDICAL ART: *Proposed by* ALEXANDER WALKER, *Esq. Lecturer on Physiology at Edinburgh.*

THE following sketch of a natural system of medical science, is founded on the strict basis of physiology, and is, I trust, calculated to place, in a new and more interesting point of view, the beautiful relations which subsist between the sciences of anatomy and physiology, and the art of medicine, as well as to lay the foundation of a more rational system of medical practice. I do not, however, make this statement without a feeling of the utmost deference to the labours of the celebrated Cullen and the more illustrious Brown, the immortal authors of existing systems. Nothing less than a conviction of the truth and simplicity of the system I am about to propose, could have induced me to presume to exhibit it.

In it, as I have subsequently observed, it will be seen that all the parts of medical science correctly correspond and beautifully flow from each other: while anatomy is the basis of physiology, physiology is the basis of medicine; the classification of one is applicable to the rest, and all of them at once involve mineral, vegetable, and animal nature.

Natural Arrangement of Medicine.

In proceeding to a natural arrangement of *anatomy* and *physiology*, it appears to me an unquestionable point, that it ought to indicate, at a single glance, the dependence of one function upon another. It is upon this principle that I have constructed the natural arrangement which I am about to detail. And a single remark on the arrangements adopted by the most celebrated modern physiologists, will, at once, shew the originality of the plan which I propose, and point out the errors of arrangement which I deprecate.

Blumenbach, Chaussier, Dumas, and Bichat treat of circulation before absorption, on which it depends; and even before mastication, deglutition and digestion, on which, in general, even absorption chiefly depends.

If the arrangement of Chaussier in particular, who, in this respect, is as accurate as any of them, were to be considered as indicating the *relation* and *dependence* of the functions, so absurd is it, that absorption, instead of the cause, would be the result of nutrition, generation the result of absorption, and digestion the result of generation.

ANATOMY, I divide into three parts; namely, that which considers the *mechanical* or *loco-motive organs*, that which considers the *vital organs*, and that which considers the *intellectual organs*. Under the MECHANICAL or LOCOMOTIVE ORGANS, I class, first, the *bones*, which support the rest of the animal structure; second, the *ligaments*, which unite them; and third, the muscles, which move them. Under the VITAL ORGANS, I class, first, the organs of digestion, the absorbent surfaces, and the vessels which absorb from these surfaces; second, the *heart*, *lungs*, and *blood-vessels*, which derive their contents (the blood) from the absorbed lymph; and third, the *organs* of *secretion*, which separate various matters from the blood. Then follow the *generative organs*, which, though commonly formed into a distinct class from the vital, ought not, by any means, to be so reckoned. For, it is evident, that they form, as it were, the sequel of the vital organs, being dependent on secretion, the last of the vital functions, and destined merely to propagate vitality, and to communicate it to a new series of beings. Under the INTELLECTUAL ORGANS, I class, first, the *organs of sense*, where impressions take place; second, the *brain* or *organ* of judgment,

where these excite ideas; and third, the *nerves*, where volition results from the last. TABLE I. represents this arrangement.

This is a NATURAL ARRANGEMENT of the Anatomy of Animals, and its peculiar simplicity is illustrated by its involving, in application, that of Minerals and Vegetables, and by its being capable of instant adaption to Physiological Science.

In order to arrange Animal PHYSIOLOGY, it is only necessary to substitute the term "functions" for "organs;" and that science will likewise involve, in application, the Physiology of *mineral* and *vegetable* bodies, and be, in its turn, capable of instant adaption to *Medical Science*.

Thus the functions are divided into *mechanical*, *vital*, and *intellectual*.—The MECHANICAL FUNCTIONS are subdivided into the function of *support*, the function of *connection*, and the function of *loco-motion*. The VITAL FUNCTIONS are divided into the function of *absorption*, the function of *circulation*, and the function of *secretion*. The INTELLECTUAL FUNCTIONS are divided into the function of *sensation*, the function of *mental operation*, and the function of *volition*. TABLE II. exhibits this arrangement.

A circle of functions, I may observe, thus exists in Animals, which exists not in minerals or vegetables; because volition, the last of the intellectual functions, connects itself to the mechanical functions, by rendering them subservient to it in loco-motion. Thus the first and the last of these functions are as intimately connected as any of the intermediate ones, and a beautiful circle of organic function and influence is formed.

In order to arrange MEDICAL SCIENCE, for the term "HEALTHY FUNCTIONS," the subject of physiology, it is only necessary to substitute the term "Diseased Functions." The classes of disease are, therefore, like those of Anatomy and Physiology, three; namely, DISEASES OF THE MECHANICAL OR LOCO-MOTIVE FUNCTIONS, DISEASES OF THE VITAL FUNCTIONS AND DISEASES OF THE INTELLECTUAL FUNCTION. The ORDERS of the first class, as affecting the functions of the *bones*, the *ligaments*, and the *muscles*, are three, viz. DISEASES OF SUPPORT, DISEASES OF CONNECTION, AND DISEASES OF LOCO-MOTION. Those of the second class, as affecting the functions of the *absorbent*, *circulating* and *secreting* vessels, are likewise three, viz. DIS-

EASES OF ABSORPTION, DISEASES OF CIRCULATION, AND DISEASES OF SECRETION. Those of the third class, as affecting the functions of the *organs of sense*, of the *brain*, and of the *nerves*, are also three, viz. DISEASES OF IMPRESSION, DISEASES OF JUDGMENT, AND DISEASES OF VOLITION. The *genera*, under each order, consist of *diseases* of *diminished*, *irregular*, and *increased function*, as will readily be understood from TABLE III.

This arrangement of disease likewise involves in application, that of minerals (if we choose to maintain the analogy, and to give that name to mere injury of structure) and of vegetables as well as of animals. The first would have what might be termed diseases of mechanical structure; the second, diseases of mechanical and vital functions; and the third, diseases of mechanical, vital, and intellectual functions; corresponding to the observation, that minerals exist, vegetables exist and live, and animals exist, live, and think.

Precisely in the same way would I class the articles of the Materia Medica; first, as operating upon the mechanical, vital, or intellectual organs, and then as either diminishing, depraving, or increasing their action. TABLE IV. exhibits an arrangement of them as noxious powers; because, in it, their genera *correspond* to the genera of disease. TABLE V. exhibits an arrangement of them as remedies, because, in it, their genera are *contrasted* or *opposed* to the genera of disease. In the first the genera are arranged under the heads, "Diminishing, Depraving,* Increasing;" in the second under the heads, "Increasing, Rectifying,* Diminishing." By comparing them with the table of diseases, their use will be obvious. [*London Med. and Phys. Journal.*]

* It will be obvious, that it is entirely from the want of appropriate terms, that these words are used with considerable latitude.

OBITUARY.

Science has sustained an irreparable loss by the death of Dr. THOMAS BEDDOES, of Bristol in England, in the maturity of his talents, and at the meridian of his reputation and usefulness. His distinguished respect for the medical principles and improvements of America is well known, and does honour to his liberality. A further account of the character of this illustrious physician and philosopher, will be given on some future occasion.

CLASS I.
Mechanical Organs.

ORDER I.	ORDER II.	ORDER III.
Bones, or Supporting Organs.	Ligaments, or Connecting Organs.	Muscles, or Moving Organs.

CLASS I.
Mechanical Functions.

ORDER I.	ORDER II.	ORDER III.
Function of the Bones, or Support.	Function of the Ligaments, or Connection.	Function of the Muscles, or Motion.

CLASS I.
Diseases of the Mechanical Functions.

ORDER I. Diseases of Support.			ORDER II. Diseases of Connection.			ORDER III. Diseases of Motion.		
Genus I. Diseases of Diminished Support.	*Genus* II. Diseases of Depraved Support.	*Genus* III. Diseases of Increased Support.	*Genus* I. Diseases of Diminished Connection.	*Genus* II. Diseases of Depraved Connection.	*Genus* III. Diseases of Increased Connection.	*Genus* I. Diseases of Diminished Motion.	*Genus* II. Diseases of Depraved Motion.	*Genus* III. Diseases of Increased Motion.

TABLE I.

NATURAL ARRANGEMENT OF ANATOMY.

CLASS II.
Vital Organs.

III. s, rgans.	ORDER I. Lymphatics, &c. or Absorbing Organs.	ORDER II. Blood Vessels, &c. or Circulating Organs.	ORDER III. Glands, &c. or Secreting Organs.	ORDER I. Eye, Ear, Skin, or Organs of Sensa

TABLE II.

NATURAL ARRANGEMENT OF PHYSIOLOGY.

CLASS II.
Vital Functions.

ORDER I. Function of the Lymphatics, &c. or Absorption.	ORDER II. Function of the Blood Vessels, &c. or Circulation.	ORDER III. Function of the Glands, &c. or Secretion.

TABLE III.

NATURAL ARRANGEMENT OF DISEASES.

CLASS II.
Diseases
of the
Vital Functions.

ORDER I. Diseases of Absorption.			ORDER II. Diseases of Circulation.			ORDER III. Diseases of Secretion.		
Genus I. Diseases of Diminished Absorption.	*Genus* II. Diseases of Depraved Absorption.	*Genus* III. Diseases of Increased Absorption.	*Genus* I. Diseases of Diminished Circulation.	*Genus* II. Diseases of Depraved Circulation.	*Genus* III. Diseases of Increased Circulation.	*Genus* I. Diseases of Diminished Secretion.	*Genus* II. Diseases of Depraved Secretion.	*Genus* III. Diseases of Increased Secretion.

CLASS III.
Intellectual Organs.

ORDER I.	ORDER II.	ORDER III.
Ear, Skin, &c.	Brain,	Spinal Marrow, &c.
or	or	or
ns of Sensation.	Organ of Mental Operation.	Organs of Volition.

CLASS III.
Intellectual Functions.

ORDER I.	ORDER II.	ORDER III.
Function of the Eye, Ear, &c.	Function of the Brain,	Function of the Spinal Marrow, &c.
or	or	or
Sensation.	Mental Operation.	Volition.

CLASS III.
Diseases
of the
Intellectual Functions.

ORDER I. Diseases of Sensation.			ORDER II. Diseases of Mental Operation.			ORDER III. Diseases of Volition.		
Genus I. Diseases of Diminished Sensation.	*Genus* II. Diseases of Depraved Sensation.	*Genus* III. Diseases of Increased Sensation.	*Genus* I. Diseases of Diminished Mental Operation.	*Genus* II. Diseases of Depraved Mental Operation.	*Genus* III. Diseases of Increased Mental Operation.	*Genus* I. Diseases of Diminished Volition.	*Genus* II. Diseases of Depraved Volition.	*Genus* III. Diseases of Increased Volition.

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ORDER III.
Medicines
affecting the
Function of Volition.

	Genus I.	*Genus* II.	*Genus* III.	*Genus* I.	*Genus* II.	*Genus* III.
s	Medicin	cines	Medicines	Medicines	Medicines	Medicines
g	Deprav	aving	Increasing	Diminishing	Depraving	Increasing
n.	Absorpt	Operation.	Mental Operation.	Volition.	Volition.	Volition.

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ORDER III.
Medicines
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Volition.

	Genus II.	*Genus* III.	*Genus* I.	*Genus* II.	*Genus* III.
s	Medicine	Medicines	Medicines	Medicines	Medicines
g	Rectifying	Diminishing	Increasing	Rectifying	Diminishing
on.	Absorptio	ration. Mental Operation.	Volition.	Volition.	Volition.